DISSERTATION REPORT

Remodelling of an Oil Platform

by

Bernhard VIERECK

Dissertation submitted in partial fulfilment

of the requirements for the

Bachelor of Engineering (Hons)

(Civil Engineering)

APRIL 2009

University Technology PETRONAS

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CERTIFICATION OF APPROVAL

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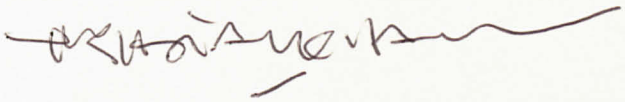
Approved by,



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ABSTRACT

The following abstract is taken from Bernhard VIERECK .

The objective of this project is to show that a total misappropriation of a technical structure is possible and also that it can be used in a commercial way. The remit of this project is, to divert an overage oil platform from her intended use, with the primary target, to remodel it into a commercial useable entertainment island.

However the current structure should be left sustainable as far as possible and should be integrated and shown in the remodeling. Due to the fact that an oil drilling rig has an enormous effective area, it is now possible, to generate facilities like hotels, restaurants, entertainment- and exhibition areas, as well as living space.

Also the transport connection and the required infrastructures should be assured to fulfill the high claims of the prospective patronage. Via architectonical aspects should be visualized, that nothing advises the visitor, that he is located on an oil platform far away from the coast.

Design plans, detailed plans, models and 3D studies will show how far misappropriations of structures, which have been only functionally so far, can be possible also in an economic and reasonable way.

ACKNOWLEDGEMENT

My sincere and grateful Thanks to my supervisor Dr. Mohd Faris Khamidi, which guided me through this project. He supported and informed me in any kind of ambiguities, as well as he shared his knowledge.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

There are a lot of abandon oil platforms and rigs which are not longer required for the oil conveying companies, so they have to decide what happen with these obsolete constructions. Currently there are only two ways possible. At first, to remove the platform which costs the companies a lot of money, so in the most cases they have to find alternative opportunities. The second way to dispose rigs is, to convert them into artificial reefs.

Rigs to Reef, Texas Artificial Reef Program for example, was founded and got supported by oil and gas companies since 1950, which donated 49 rigs to this foundation. Also construction rubble, tires and other waste parts were used as artificial reefs, but these materials had only little success, because they were easily broken up. The scope of this program is to remove abandon oil and gas structures into reefs. On due date the Louisiana Artificial Reef Program has confirmed, that 120 decommissioned platforms has been prepared to create over 80 artificial reefs in the Gulf of Mexico. In the mid 70´s the most successful project occurred when 12 obsolete ships were sank in the Gulf. The development of these reefs is very satisfying for the organization behind and it is still productive and increasing.

For sure this is the most economic way to remove an abandon oil and gas structure, also in fact of generating a new habitat for lots of creatures, but there is an 3rd , very interesting way to use an obsolete platform, namely to remodel and misappropriate it into an entertainment island for public access. Not as economic as an artificial reef, but an opportunity to generate a landmark and a novelty for the future.

This project will show how this tightrope walking idea can look like.

1.2 PROBLEM STATEMENT

The biggest part of the current structure of an oil platform is built in steel and so it will be necessary to show and hide these parts in a meaningful way, because in high frequented areas for example in casinos or restaurants, especially in residential areas, it needs to pay special attention.

Also the connection to the coast will be a very important point, because these should be as comfortable as possible, an elaborate transfer schedule should be worked out.

The next problem with it will be the safety. To accentuate in an architectonical way a logical and reasonable evacuation route for emergencies will be necessary, integrated in the remodeling as sensible as possible.

In consideration of the fact that an oil platform has an enormous dead load anyway, the weight will be a problem too.

1.3 OBJECTIVES AND SCOPE OF THE STUDY

It doesn't matter if somebody is going to realize a project like this in the way of remodeling or anything else. Also to generate an artificial island in any waterbodies, as you can see in Dubai, it will be necessary to work it out as profitable and effective as possible. This project should be seen as something like a "prefiguration", moreover it should show how far it is possible to build a commercial offshore platform in a reasonable way.

To handle such a project, it is required to apply software like AutoCAD for generating plans and special software for visualizing 3D studies, for example 3DStudio max.

CHAPTER 2

LITERATURE REVIEW

2.1 History and appearance of oil platforms

To be successful with devising this project it is necessary to analyse the previous and current structures of oil platforms. It is indispensable to understand the usage, the fabrication and the development of oil rigs formerly and now.

Oil platforms are very huge structures which are applied to drill into an oil field to conveying the oil from the earth soil. In fact that oil is currently still an exigency for humanity, engineers, developer, and scientists are still motivated to find new ways to discover and extract oil since many decades. By reason of that oil fields are mostly found offshore, it was necessary to build structures to conveying that recourse from deep below the bottom of the sea. Also the circumstance that the soil is formed by rocks and impassable terrain, it was challenging the engineers to develop different types of offshore rigs and platforms.

In the Caspian sea next to the coast of Azerbaijan the first oil platform was built in 1947. Some people describe this platform as a miracle, because its population is about 5000 workers and more than 160 km of paved street. Also many restaurants, shops and facilities like this were developed, to make the workers life as comfortable as possible over there, because mostly they stay there for more than 6 month permanently.

2.2 Different types of oil rigs and platforms

There are different types of oil platforms and rigs. Some of them have something like legs which are reaching until the sea soil, you can compare them with "artificial islands", others are floating like huge ships which are hold by anchors. A typical platform has about thirty vessels to absorb the conveying oil, which get found in different depths with a distance up to 8 kilometers.

2.2.1 Fixed platforms

Fixed platforms exhibit two main components, the substructure and the superstructure.

The superstructure is supported on a deck, which is fixed on the jacket structure. On it you can find a modular system for every facility which is necessary for running an oil platform, as well as to guarantee a comfortable life for the workers. This modules contain living quarters, restaurants, shops, a gas flare stack, revolving cranes, survival craft, a helicopter deck, house drilling equipment, production equipment including gas turbine, generating sets, and space for pumps and compressors.

The substructure is made in steel (steel jacket) or concrete, but only a few have concrete foundations. In fact that every part where oil was discovered is different to the other, all platforms are specially designed for the diverse conditions and characteristics of the soil. Also conditions like wind, waves and water depths will play its roll.

Also floating steel and floating concrete structures are used. Especially the concrete structures have an interesting competence. Floating oil tanks, located below the sea surface, are used as floating capability, which allows the platform to stay close to the coast and then floated to their final position where the tanks get sank to the sea soil. Fixed platforms can be build in depths up to 520 meters.

2.2.2 Jack–up platforms

Jack-up platforms have a concrete foundation with anchored telescoping metal legs, which can compensate the water deformations on the sea surface depending on the weather circumstances. They are designed for depths up to 170 meters and to move from one place to the other, after finding the final place the metal legs are anchoring themselves with an electrical or hydraulic system.

2.2.3 Spar platforms

Spar platforms are normally used in very deep water and are placed vertically. They were developed for an alternative to common platforms, consisting a large-diameter, single vertical cylinder supporting a deck. The main structure can be compared with a floater, which is used by fisherman and about 90% of this structure is under water. Formerly the Spar platform was developed for storing oil and for gathering oceanographic data, but currently it is also used for drilling.

2.2.4 Tension Leg Platform

This type of platform is durable fixed on their own structure supported by wires which are connected with the corners of the construction. A group of these wires is called Tension Leg. It is a very popular system, because these tension legs have almost no elasticity and allow therefore nearly no vertical movements. TLP´s are designed for producing oil and gas, normally for depths about 300 meters, but currently the deepest is 1425 meters from the sea level.

2.2.5 Floating Production Systems

FPSO´s are huge ships which are not used for drilling and producing oil. They are located next to drilling platforms to store their produced oil, to process it and wait until it can be offloaded into tankers or pipelines.

2.2.6 Compliant Towers

Compliant Towers are offshore rigs used for producing oil and gas. The main components are tiny flexible framework supported towers on a deck. The flexibility allows to absorb every weather conditions, also hurricanes and is designed for water depths up to 900 meters.

2.2.7 Drillships

Similar to the FPSO´s, the drillships are huge maritime vessels to store oil, but fitted with drills for offshore oil and gas production. Mostly they are used for exploratory drills, but also jack-ups can perform this function. The most important thing regarding drillship is, that they can operate in water depths up to 3200 meters.

2.2.8 Semi-submersible Platform

This type of platforms you can generally compare with huge rafts. The structure is floating on huge buoys which are fixed on the underside of the construction. It is moving from one place to an other and can be ballasted to go up or down via altering the amount of the buoys tanks. During drill operations they get fixed by ropes to stand the position and go for depths up to 3000 meters.

2.2.9 Normally unmanned Installations

These structures are designed for working remotely under normal conditions only fitted with a small deck and a heli deck.

2.2.10 Output and Decision of Choice

For my project I decided to choose a fixed platform, especially the Tangga Barat Central Processing Platform (TPCP – A). This type of platform is accommodating all facilities like Processing Facilities, Main Power Generation, Gas Compression, Acid-

Gas Removal Facilities, Shops, Restaurants and Living Quarters, concentrated in modules which you can see in **Figure 1**. As I adduced before in point 2.2.1 it consists of two main components: The lower substructure downside, which is called jacket and is a metal tube structure, supported by piles, and the upper superstructure called topside, consisting of Module Support Frames (MSF), which allocate the facility modules and flare booms.

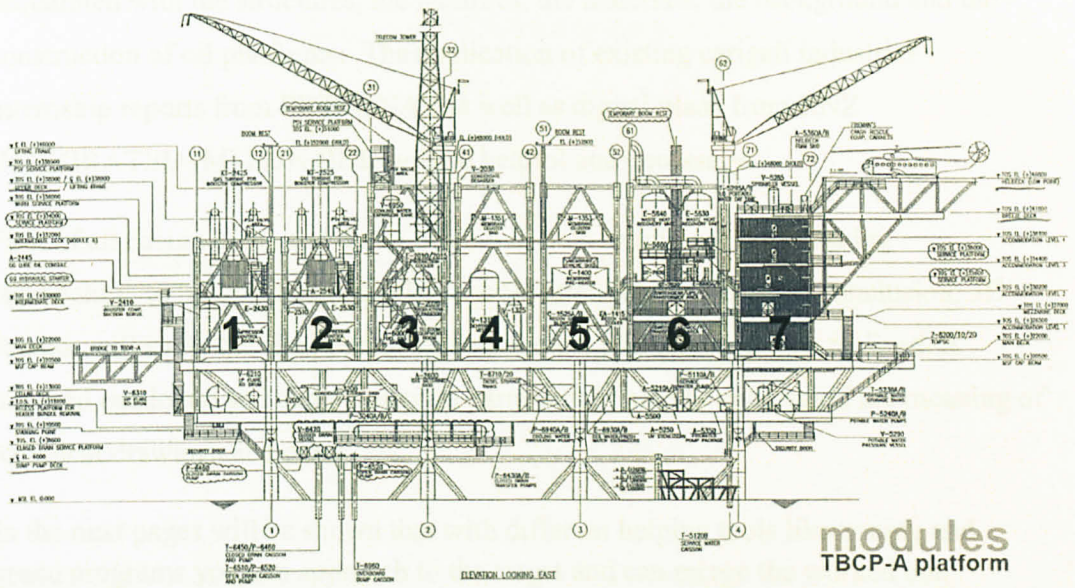


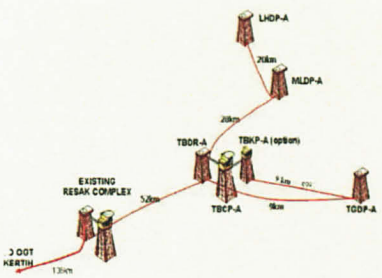
Figure 1

TBCP-A is only a part of the whole Tangga Barat Cluster project, which consists:

- 1 Central Processing Platform (TBCP-A)
- 1 Drilling Riser Platform (TBDR-A) bridge connected to TBCP-A
- 1 Flare Tripod Platform (TBFP-A) bridge connected to TBDR-A
- 2 Remote Drilling Platforms (LHDP-A, MLDP-A)
- 2 Intrafield pipelines
- 1 trunk line from TBDR-A to Resak complex

All together is working in a network as you can see in **Figure 2** below.

Figure 2



CHAPTER 3

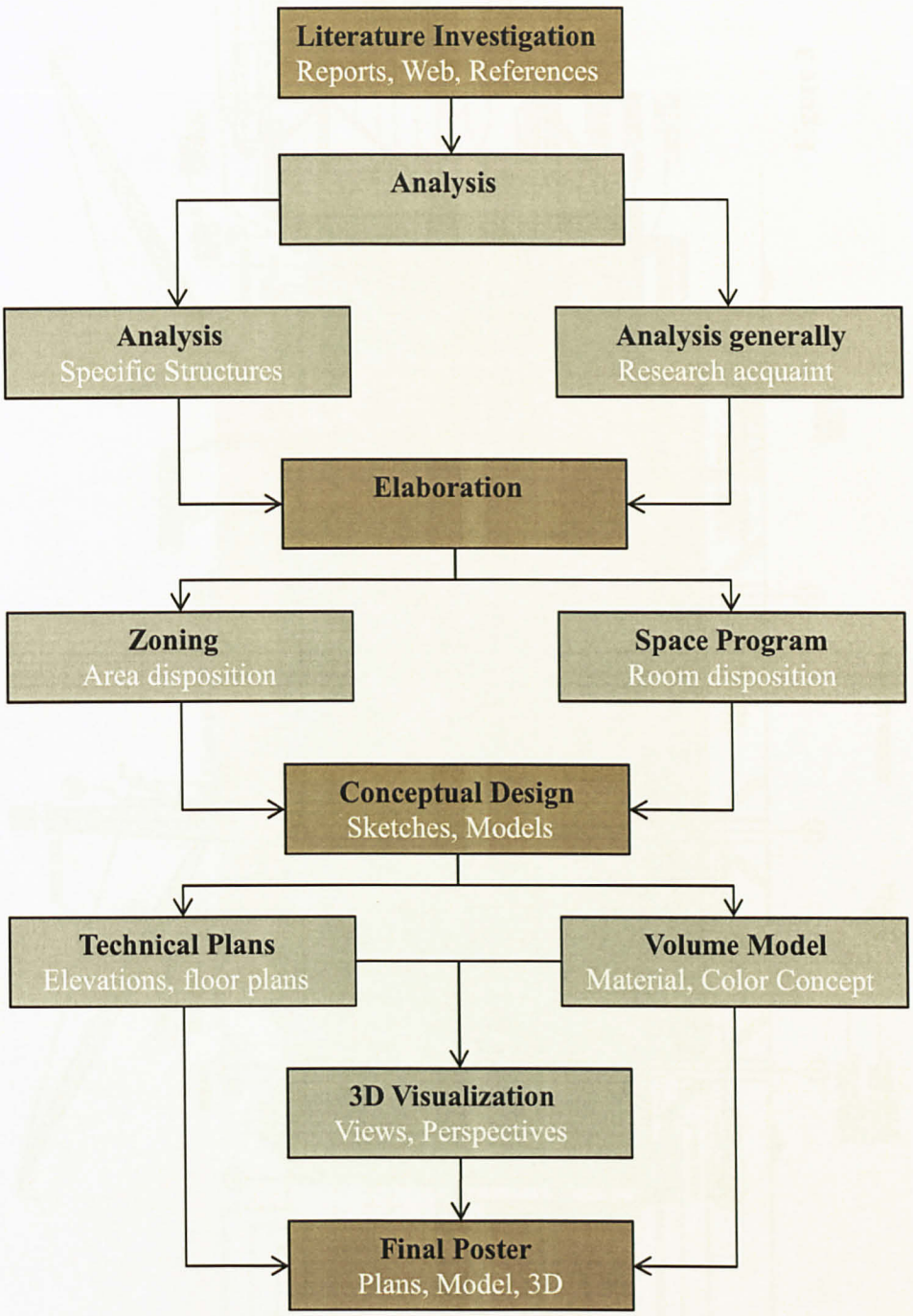
METHODOLOGY

To be successful in working out this project it will be necessary to become acquainted with the structures, the facilities, the materials, the background and the construction of oil platforms. The application of existing carigali industrial internship reports from PETRONAS as well as digital plans from RNZ INTEGRATED (M) SDN BHD will be helpful and necessary.

First of all design plans and detail plans will help to find out the finishing remodeling, to build working models should attend this process. In conclusion, 3D Studies will show the final output when a project like this would be realized. A material catalogue and superstructural parts should help to understand the meaning of technical drawings and plans.

In the next pages will be shown that with different helping tools like zoning and space programs you can approach to the target and can merge the worked out analysis into logical applications.

3.1 Course of Action



3.2 Zoning

3.2.1 Longitudinal Section

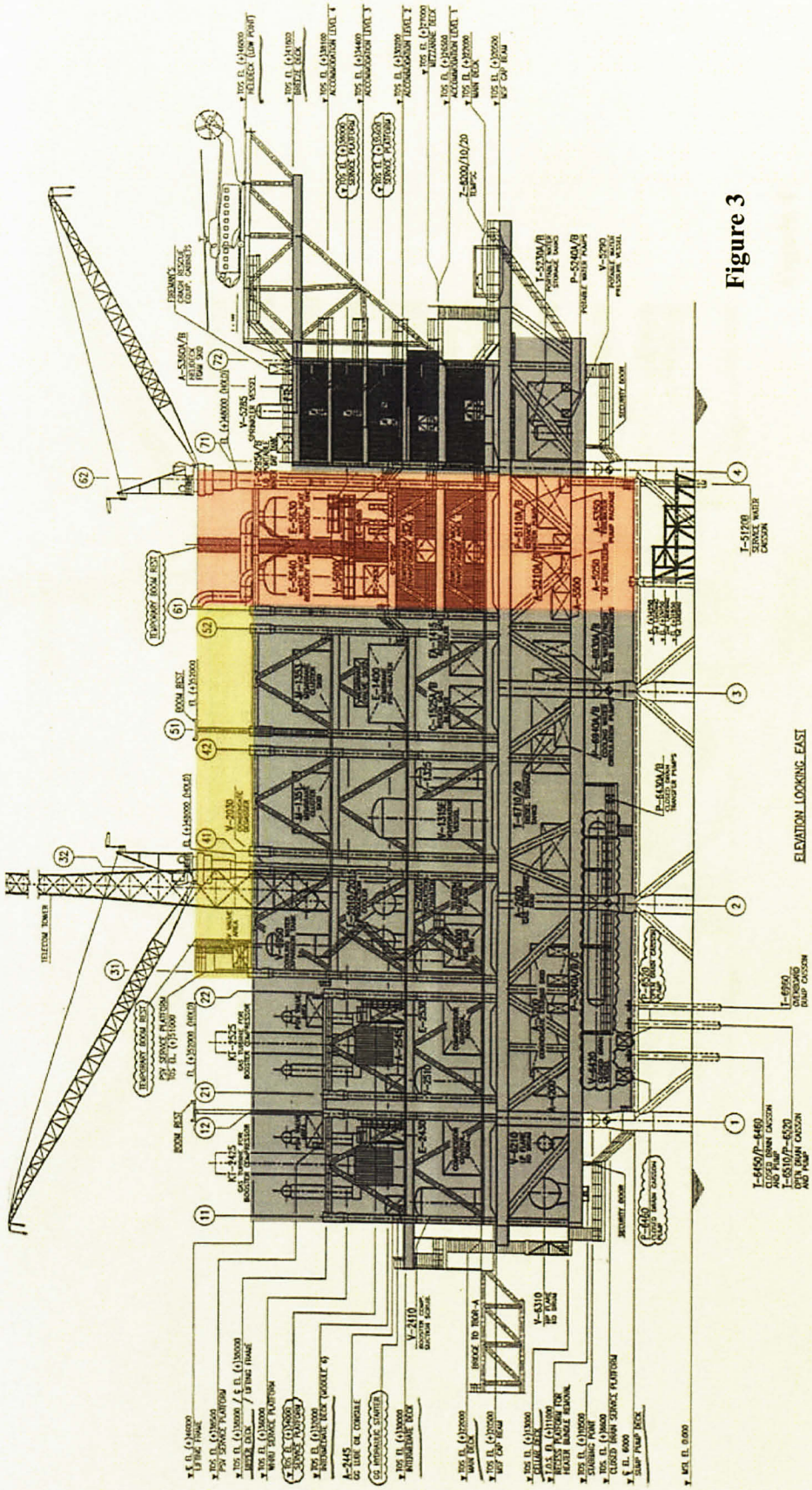


Figure 3

3. 2.2 Cross Section

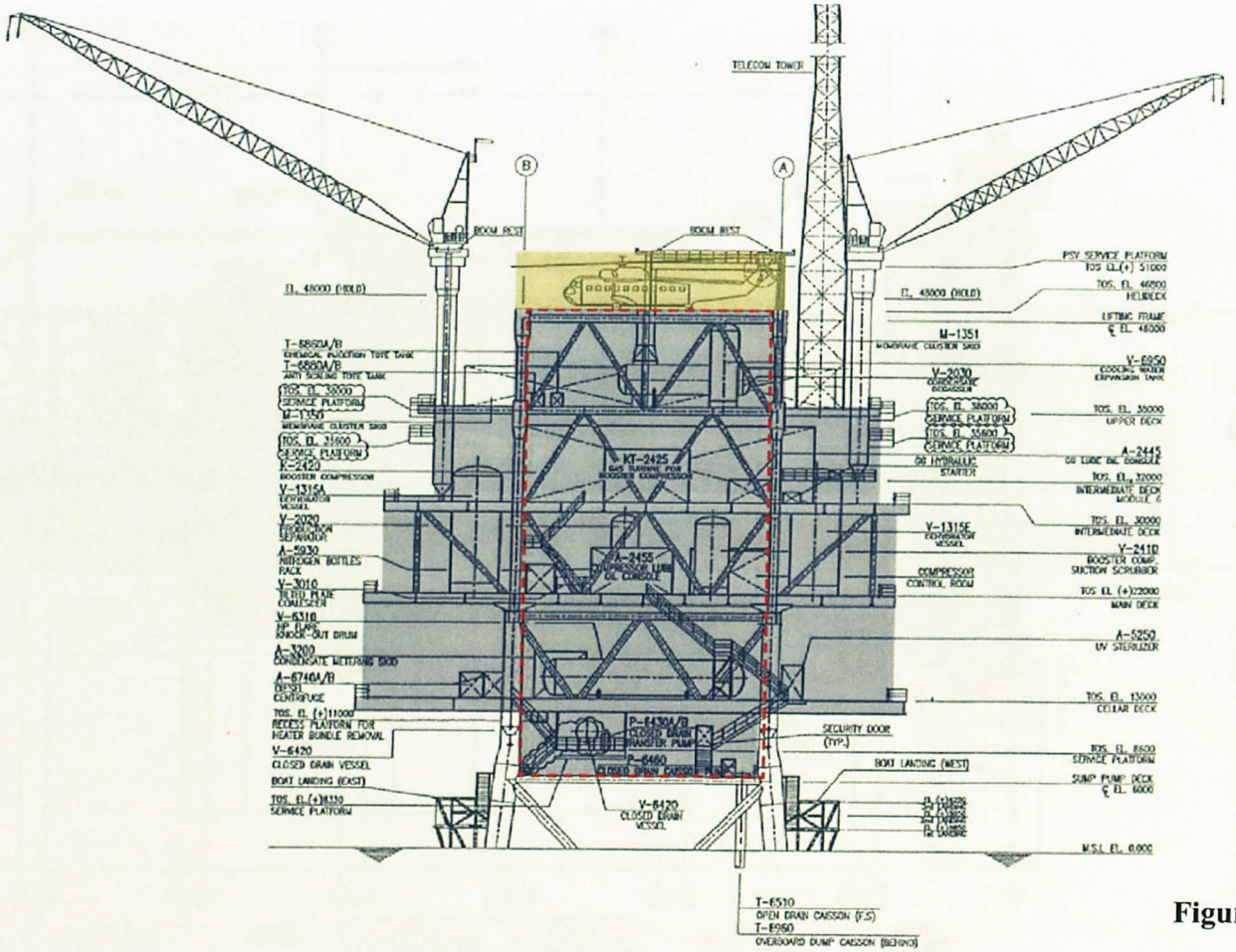


Figure 4

Effective Area Breeze Deck (new) Intended exploitation

Figure 5

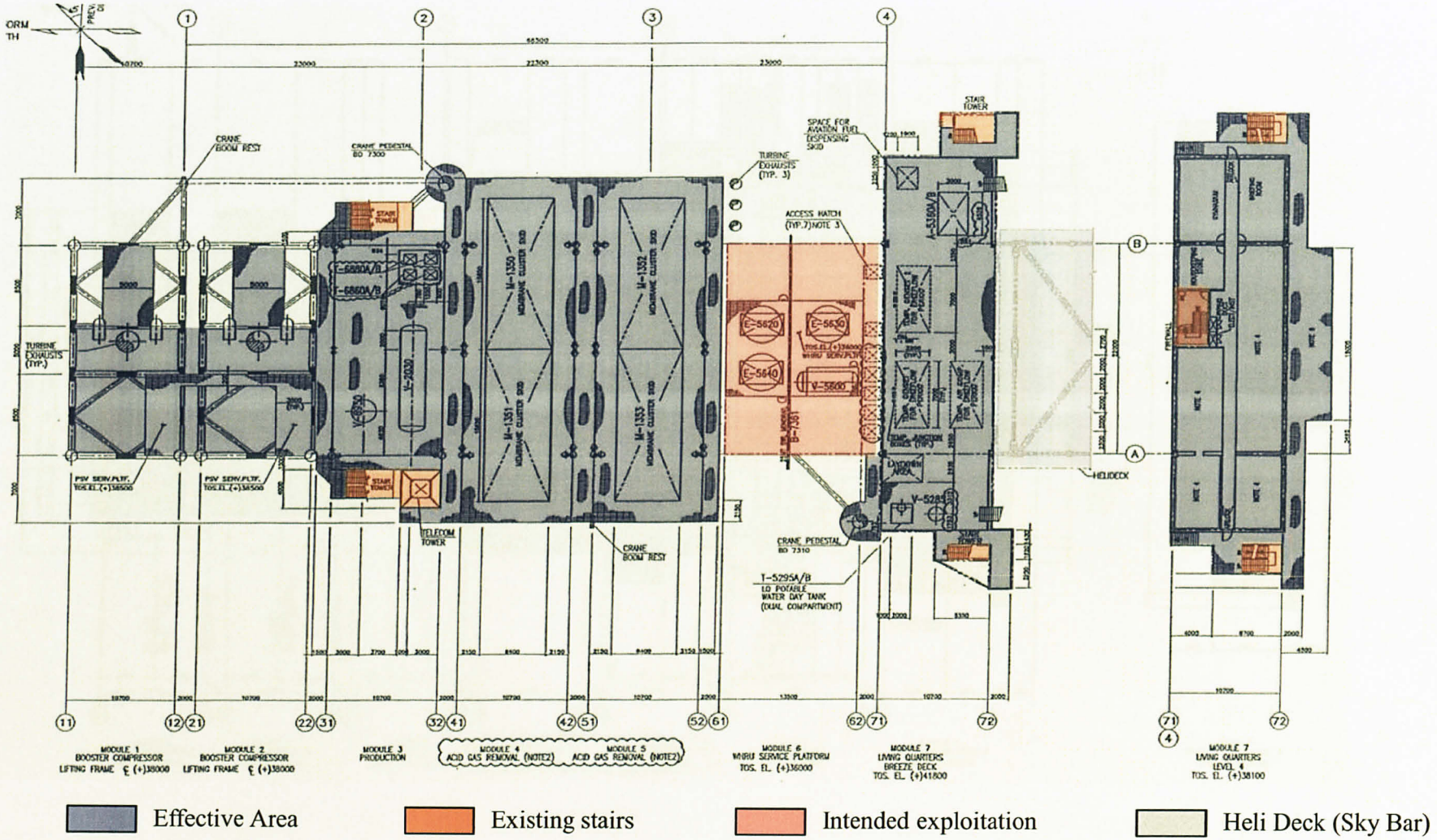

CRANE BOOM REST
CRANE PEDESTAL EL. +38000
STAIR TOWER
TURBINE EXHAUSTS (TYP. 3)
SPACE FOR AVIATION FUEL DISPENSING SKID
ACCESS HATCH (TYP.7) NOTE 3
HELIDECK
CRANE PEDESTAL EL. +38000
T-5295A/B LO POTABLE WATER DAY TANK (DUAL COMPARTMENT)
TURBINE EXHAUSTS (TYP.)
PSV SERV.PLTF. EL.(+)38500
HELICOPTER TOWER
MODULE 1 BOOSTER COMPRESSOR LIFTING FRAME EL.(+)38000
MODULE 2 BOOSTER COMPRESSOR LIFTING FRAME EL.(+)38000
MODULE 3 PRODUCTION
MODULE 4 ACID GAS REMOVAL (NOTE2)
MODULE 5 ACID GAS REMOVAL (NOTE2)
MODULE 6 WIRU SERVICE PLATFORM EL.(+)36000
MODULE 7 LIVING QUARTERS BREEZE DECK EL.(+)41800
MODULE 7 LIVING QUARTERS LEVEL 4 EL.(+)38100
Effective Area
Existing stairs
Intended exploitation
Heli Deck (Sky Bar)

Figure 6

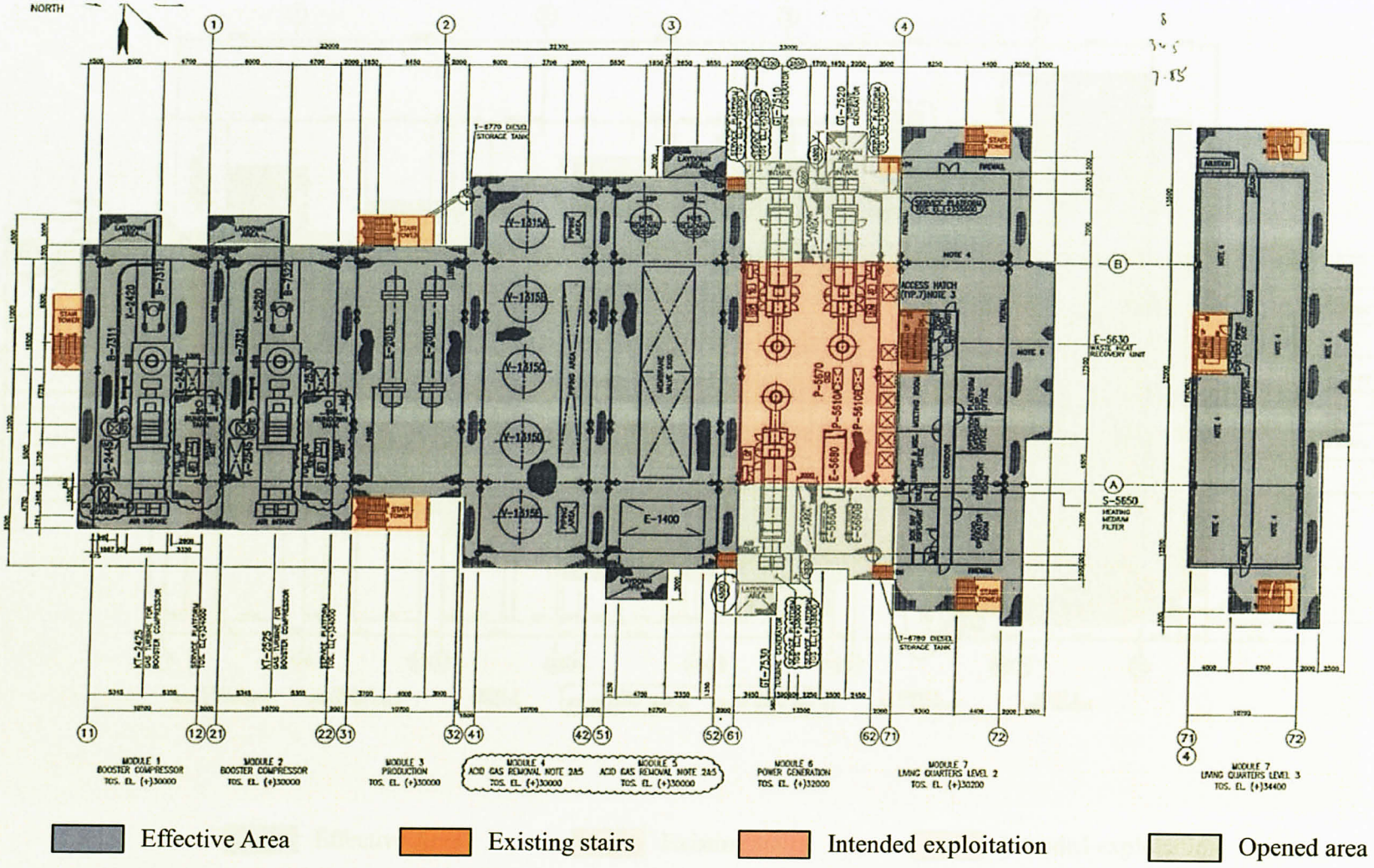
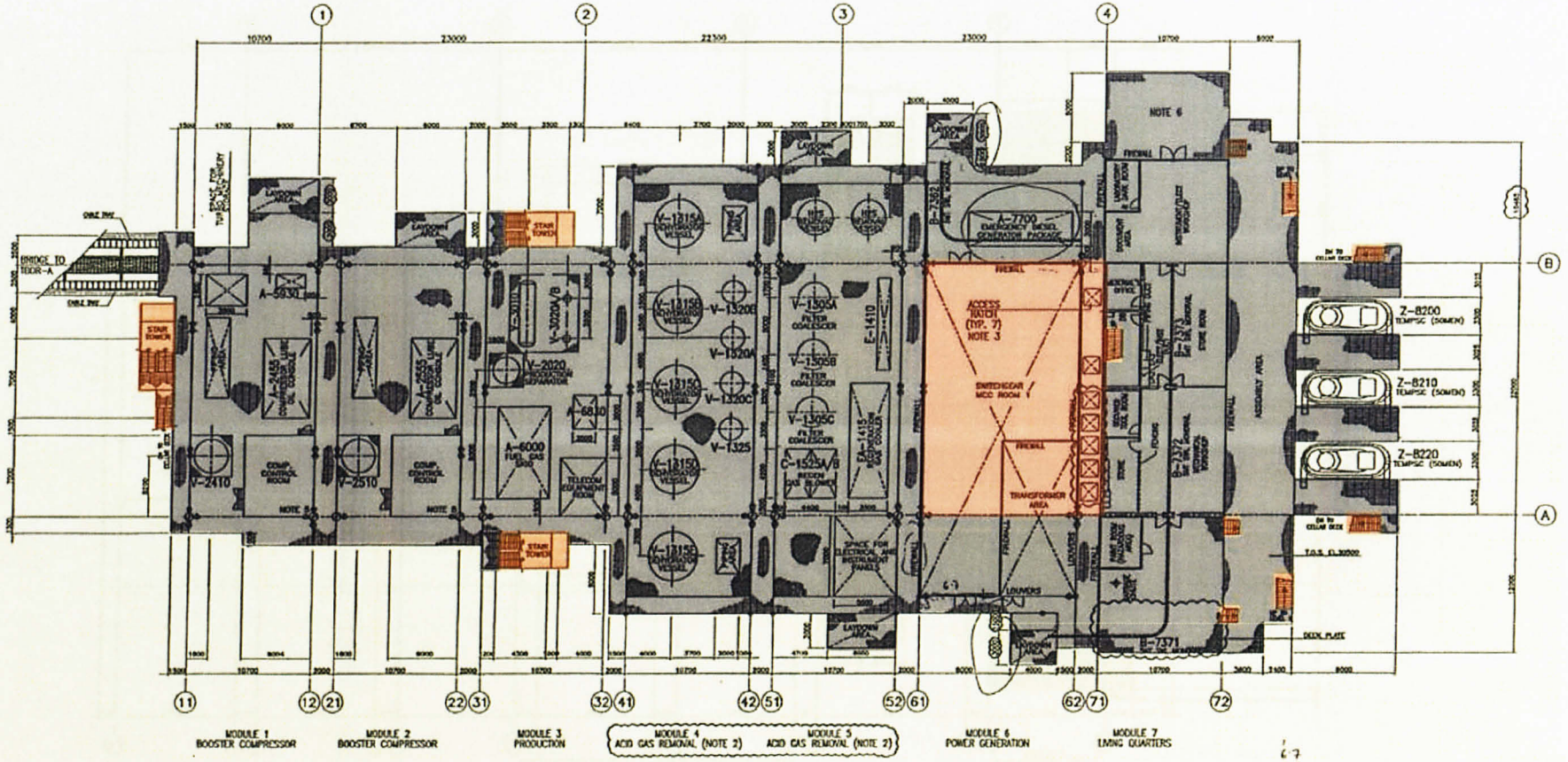

NORTH
MODULE 1
BOOSTER COMPRESSOR
TOS. EL. (+)30000
MODULE 2
BOOSTER COMPRESSOR
TOS. EL. (+)30000
MODULE 3
PRODUCTION
TOS. EL. (+)30000
MODULE 4
ACID GAS REMOVAL NOTE 2&5
TOS. EL. (+)30000
MODULE 5
ACID GAS REMOVAL NOTE 2&5
TOS. EL. (+)30000
MODULE 6
POWER GENERATION
TOS. EL. (+)32000
MODULE 7
LIVING QUARTERS LEVEL 2
TOS. EL. (+)30200
MODULE 7
LIVING QUARTERS LEVEL 3
TOS. EL. (+)34400
Effective Area
Existing stairs
Intended exploitation
Opened area

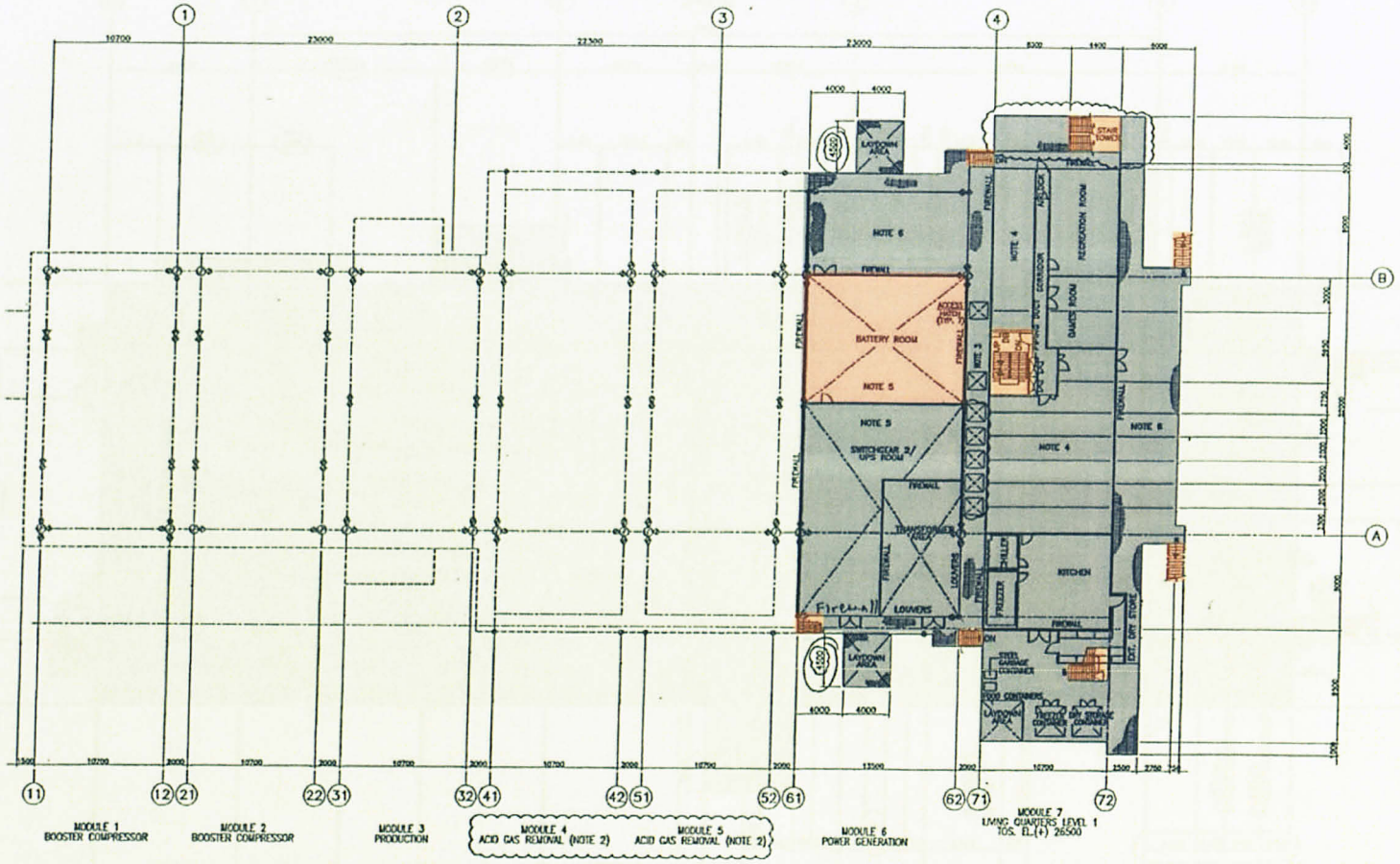
Figure 7



Effective Area Existing stairs Intended exploitation

3.2.5 Main Deck

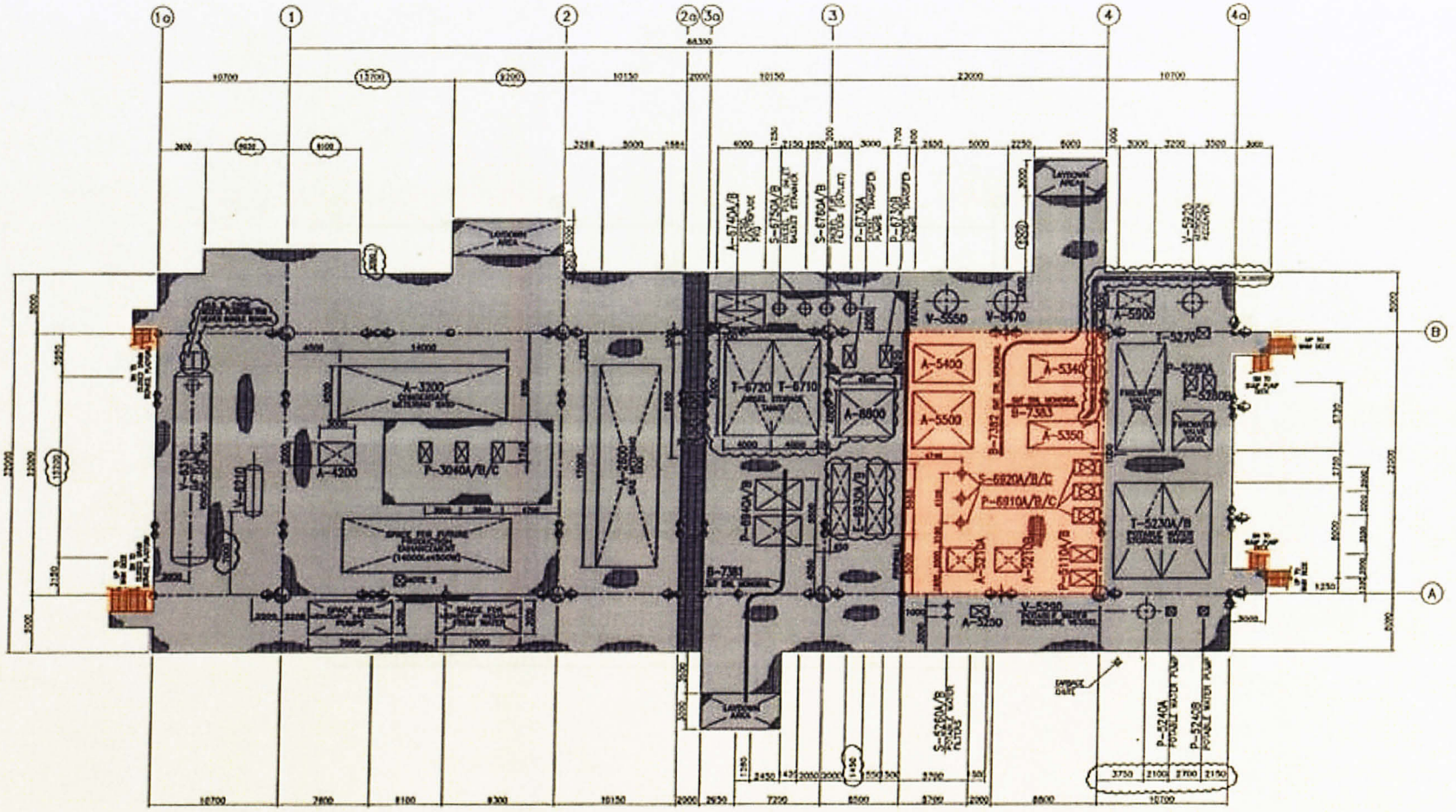
Figure 8



Effective Area Existing stairs Intended exploitation

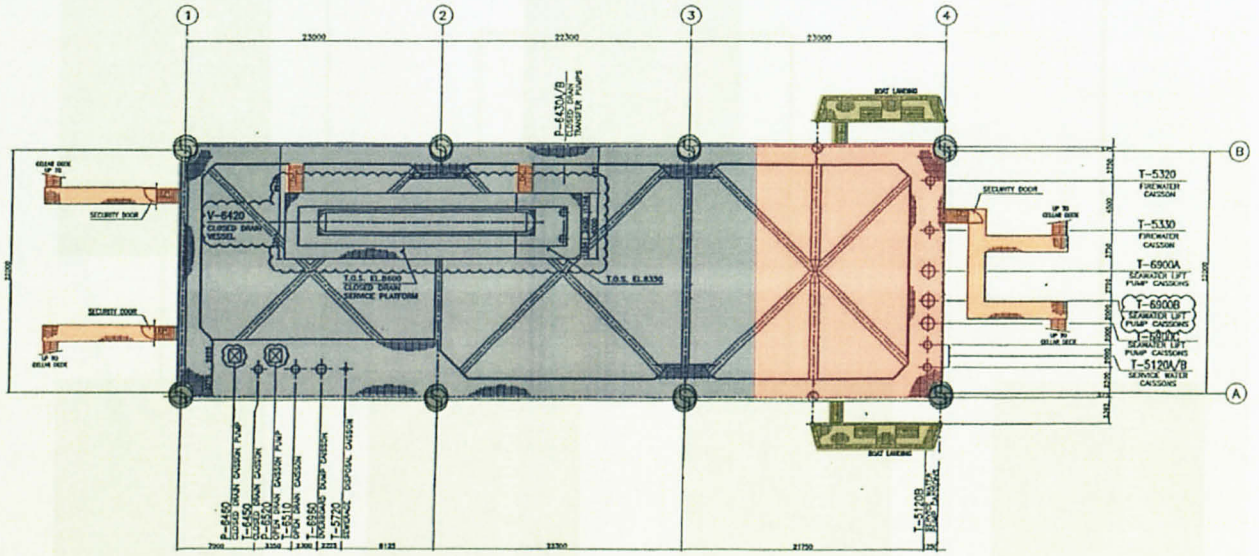
3.2.6 Mezzanine Deck

Figure 9



3.2.7 Cellar Deck

Figure 10

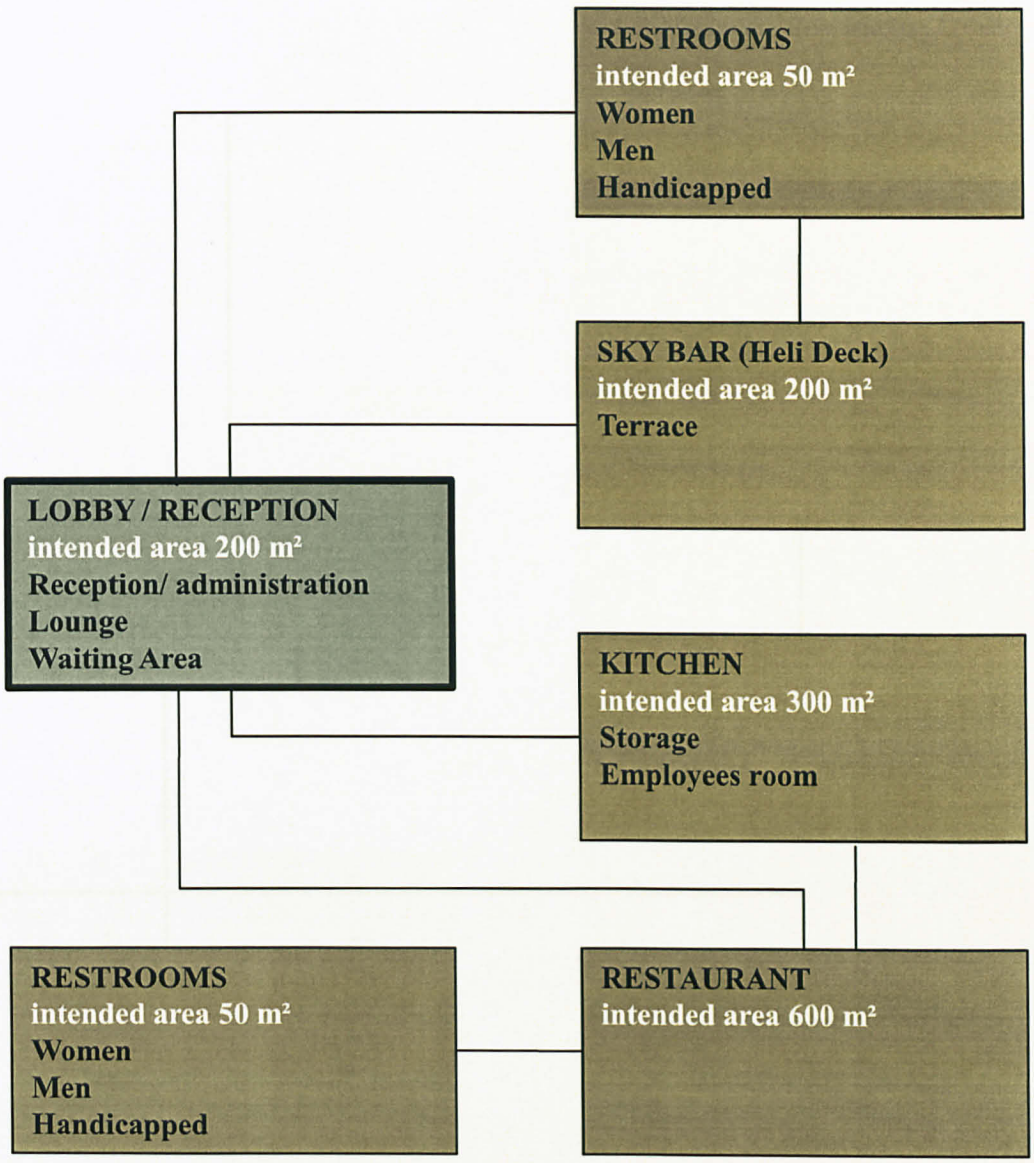


Effective Area Existing stairs Intended exploitation

3.3 Space Program

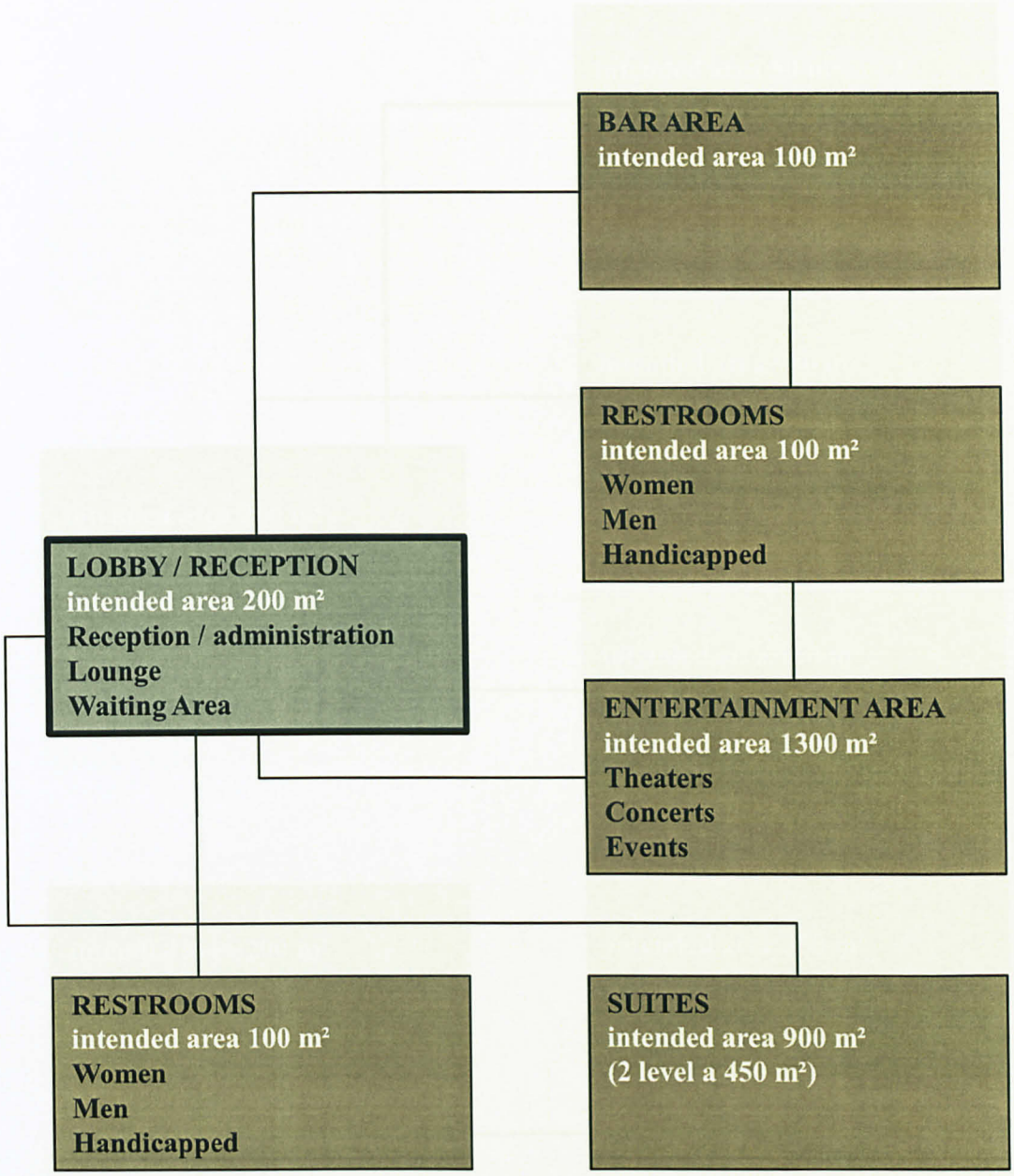
3.3.1 **Breeze Deck** (new)

Effective Area: 1812,6 m² , Exploitation Area: ~ 450 m²



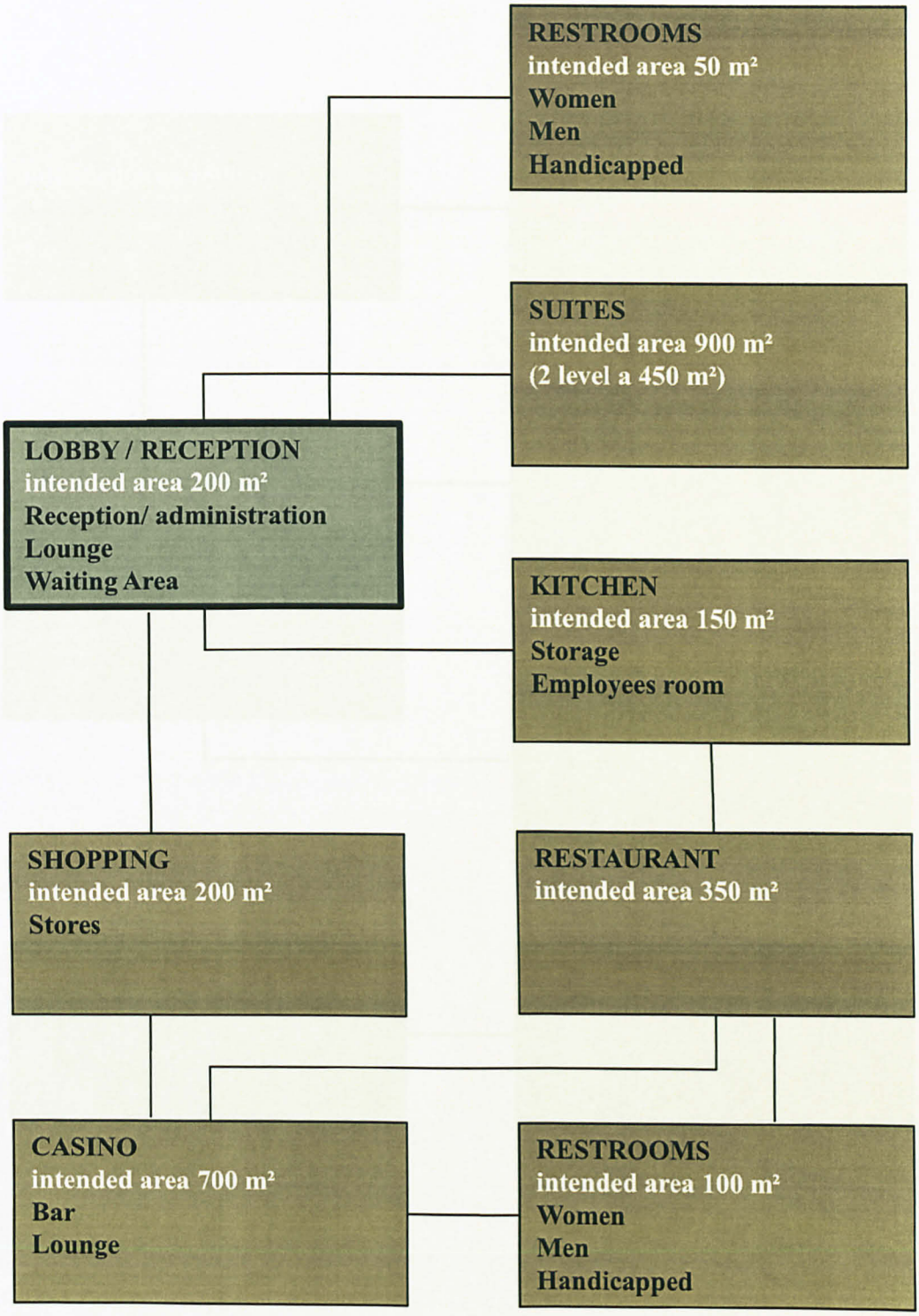
3.3.2 Upper Deck

Effective Area: 3076,1 m² , Exploitation Area: ~ 350 m²



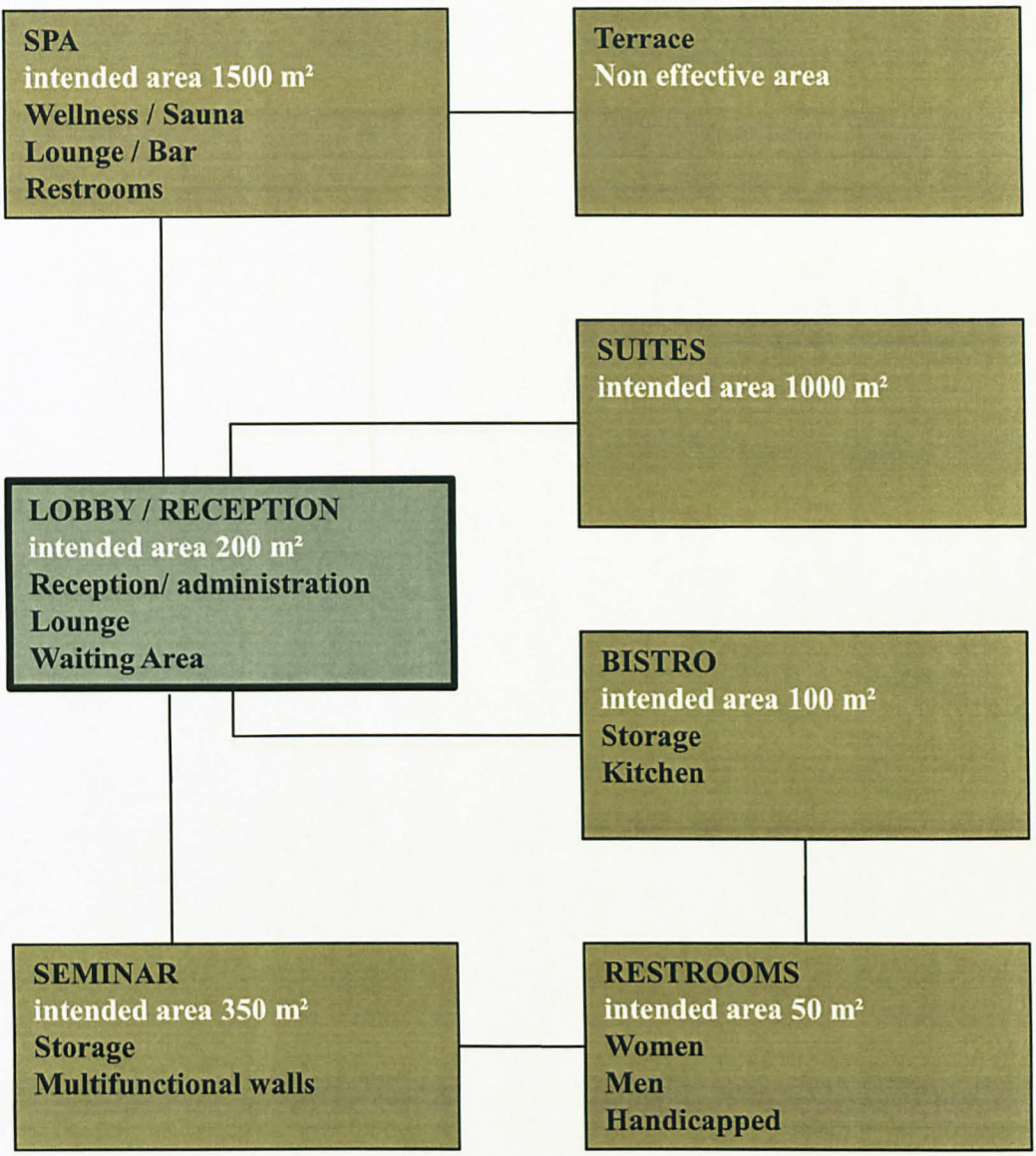
3.3.3 Intermediate Deck

Effective Area: 3494,6 m² , Exploitation Area: ~ 850 m²



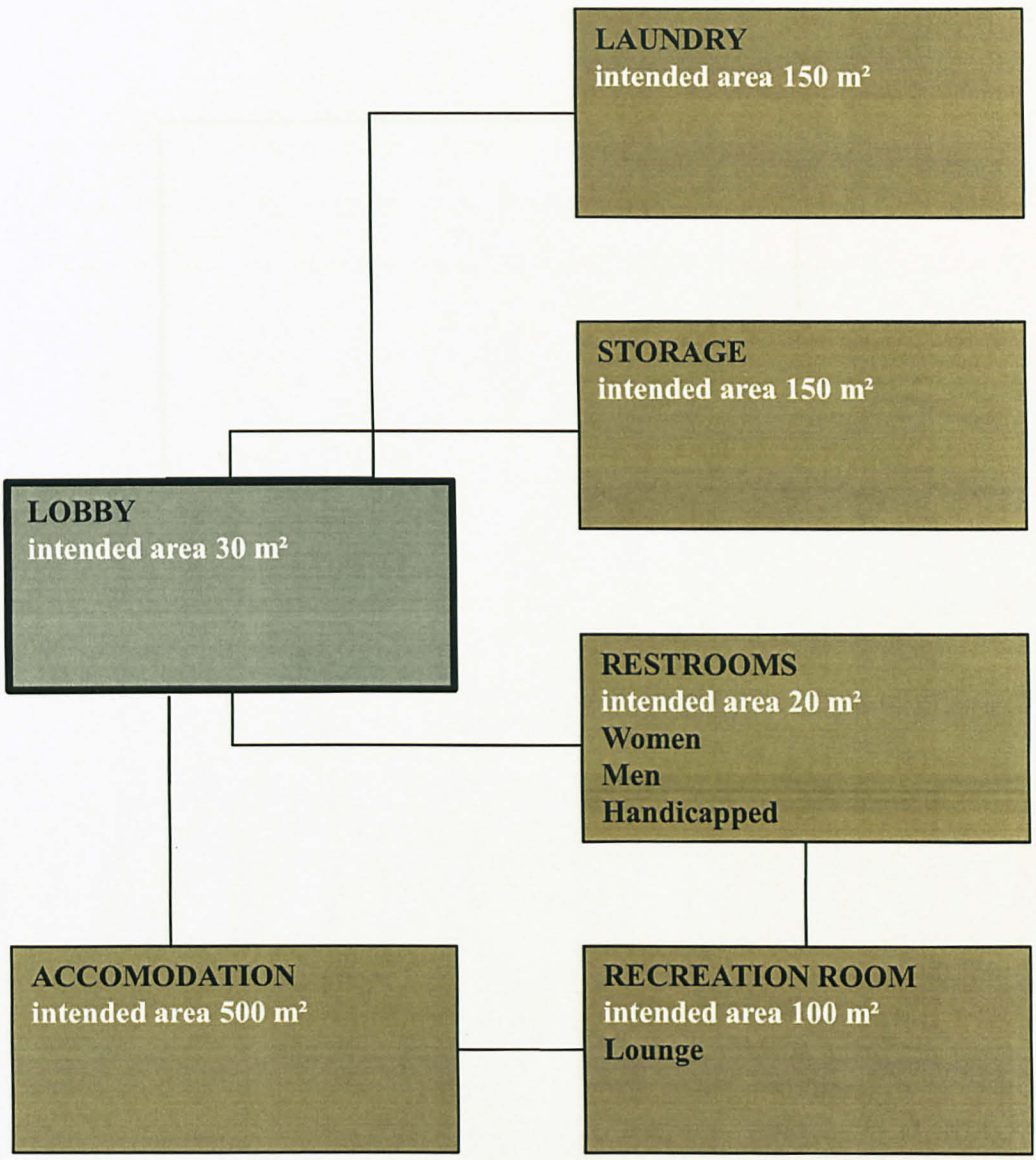
3.3.4 Main Deck

Effective Area: 3875,2 m² , Exploitation Area: ~ 600 m²



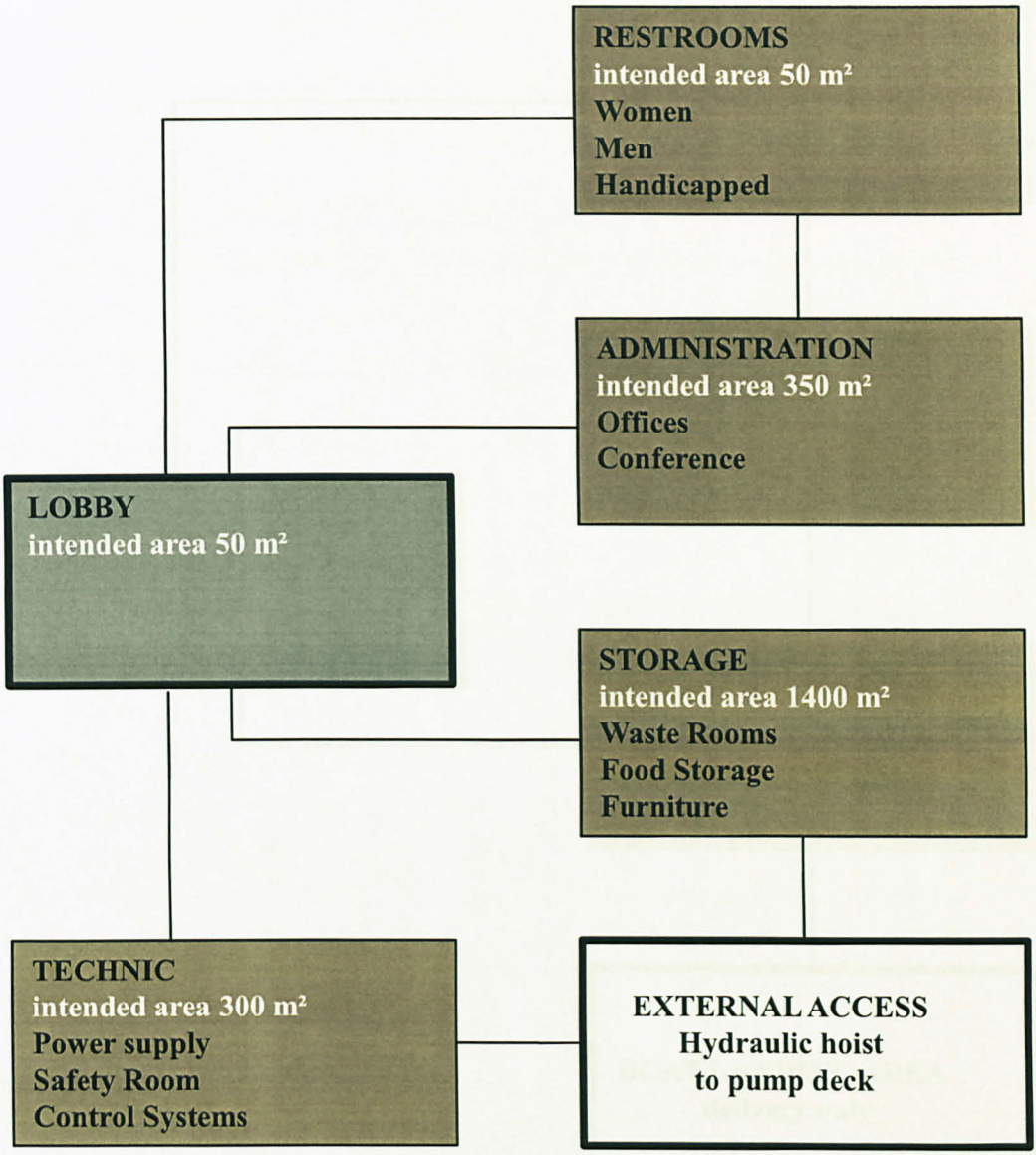
3.3.5 **Mezzanine Deck** (employees deck)

Effective Area: 1198 m² , Exploitation Area: ~ 250 m²



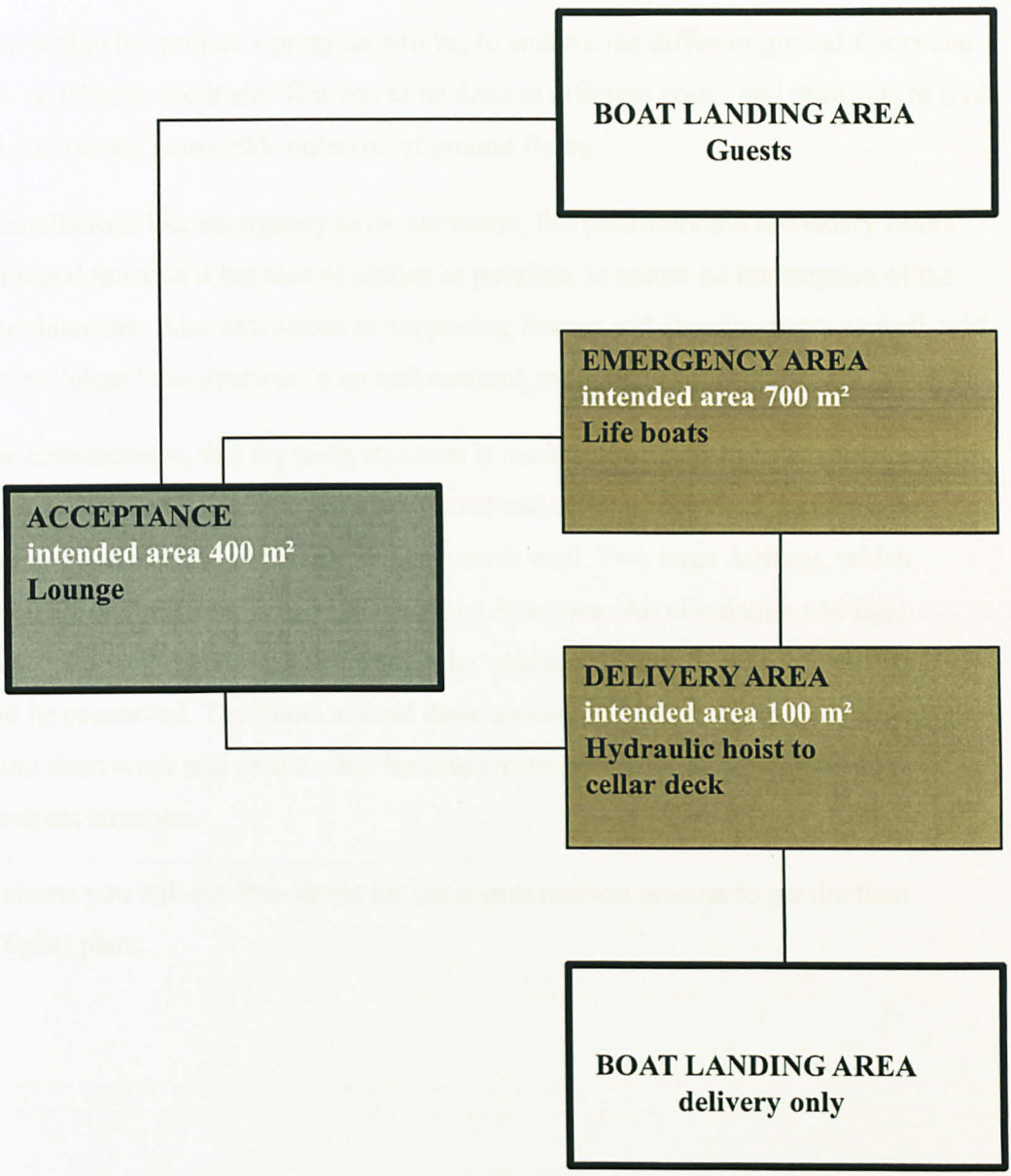
3.3.6 Cellar Deck

Effective Area: 2870,4 m² , Exploitation Area: ~ 700 m²



3.3.7 Pump Deck

Effective Area: 1518,2 m² , Exploitation Area: ~ 300 m²



CHAPTER 4

RESULTS AND DISCUSSION

4.1 DATA GATHERING AND ANALYSIS

The next step within the project´s progress will be, to analyze the different ground floors and starting with sketches to facilitate. This has to be done in different scales and drawings to find the most functional and reasonable outcome of ground floors.

Necessary installations like emergency exits, stairways, fire partitions and secondary floors has to be arranged functional but also as hidden as possible, to assure no interruption of the design and architecture. Also extensions of supporting frames and abandonments as well, will be necessary to "clean" the structure in an architectural, modern way.

In fact of the circumstance, that the main structure is made in steel, it will be tried to keep this technical atmosphere, just materials like glass, wood and different types of metal will be added to create a comfortable and warm atmosphere as well. Two huge Atriums, which shelter at once the exploitation, assure two essential functions: Air circulation and light incidence. Also the view- relationships through the whole structure, respectively the whole building will be conserved. The floors around these atriums are bridge connected, on the one hand to assure short ways and on the other hand to create architectural eagerness and to reflect the current structure.

In the next sheets you will see Pre- drafts for the approximation process to get the final outcome; Digital plans.

4.1 Data Gathering and Analyses

4.1.1 Pre- Draft, Intermediate Deck

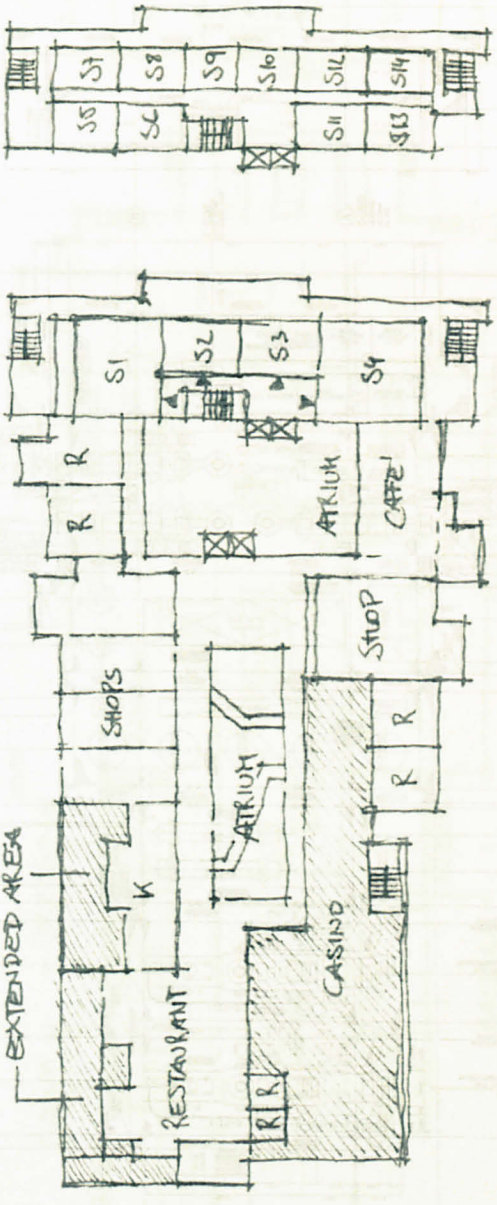


Figure 11

4.1.2 Pre- Draft, Main Deck

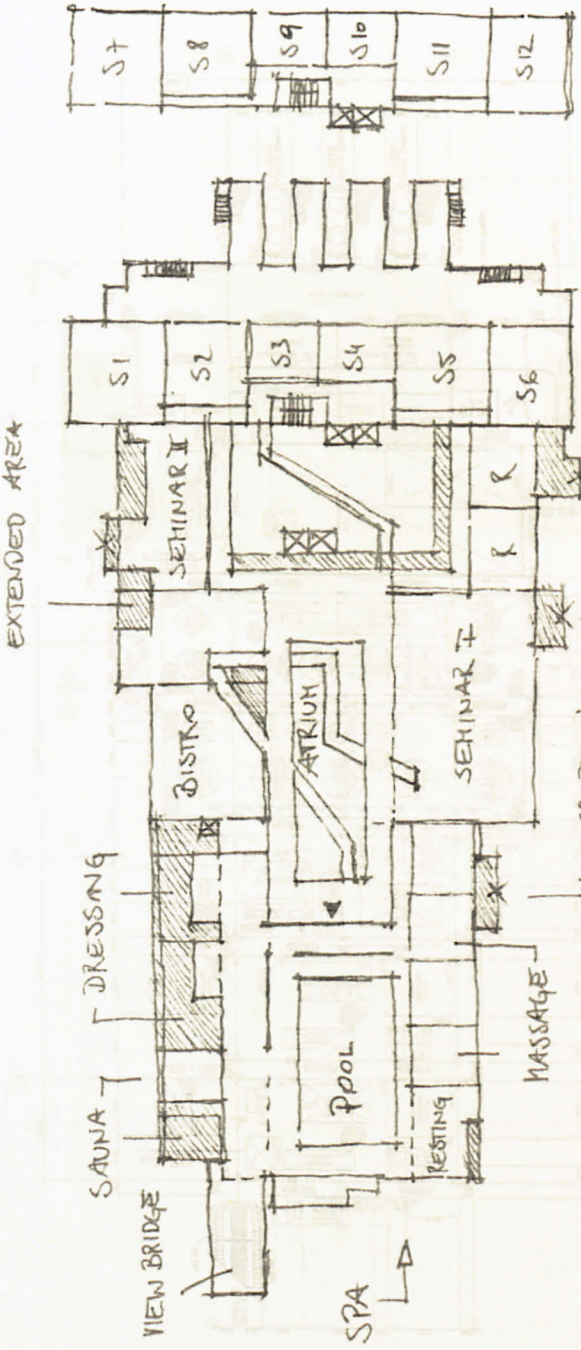


Figure 12

4.2 Experimentation / Digital Plans

4.2.1 Pump Deck (Boat Landing)

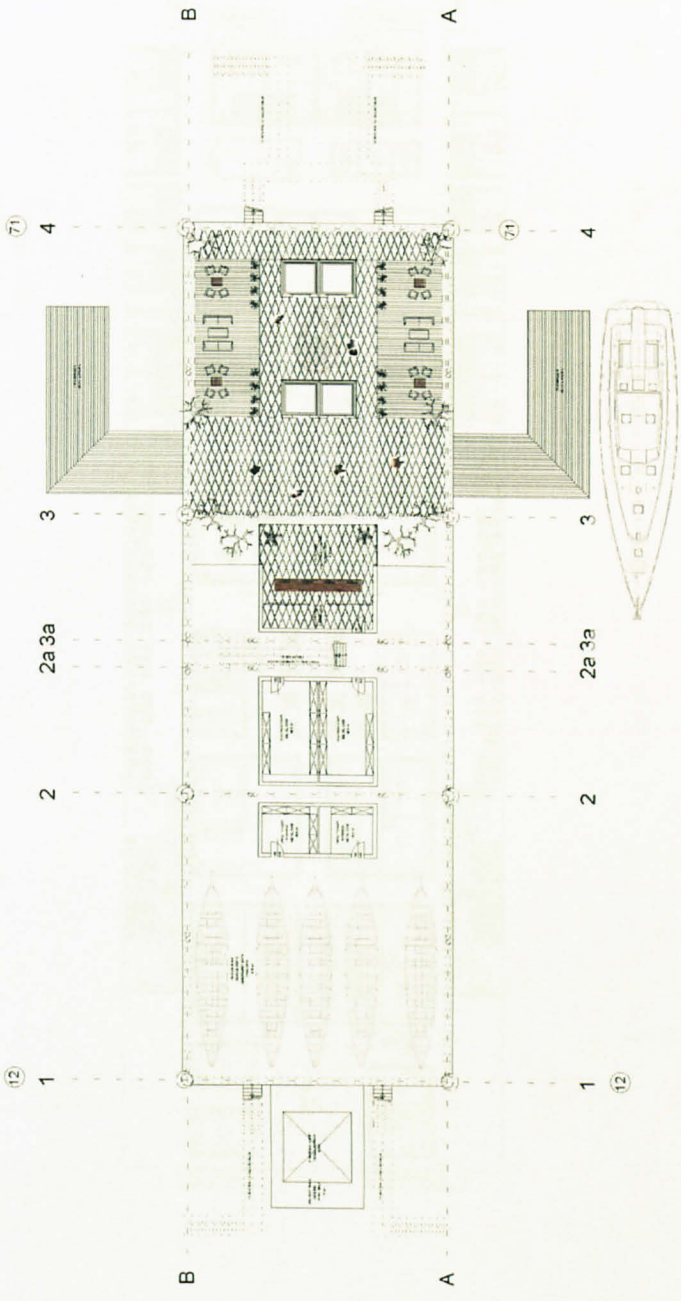


Figure 13

4.2.2 Cellar Deck (Employees Deck)

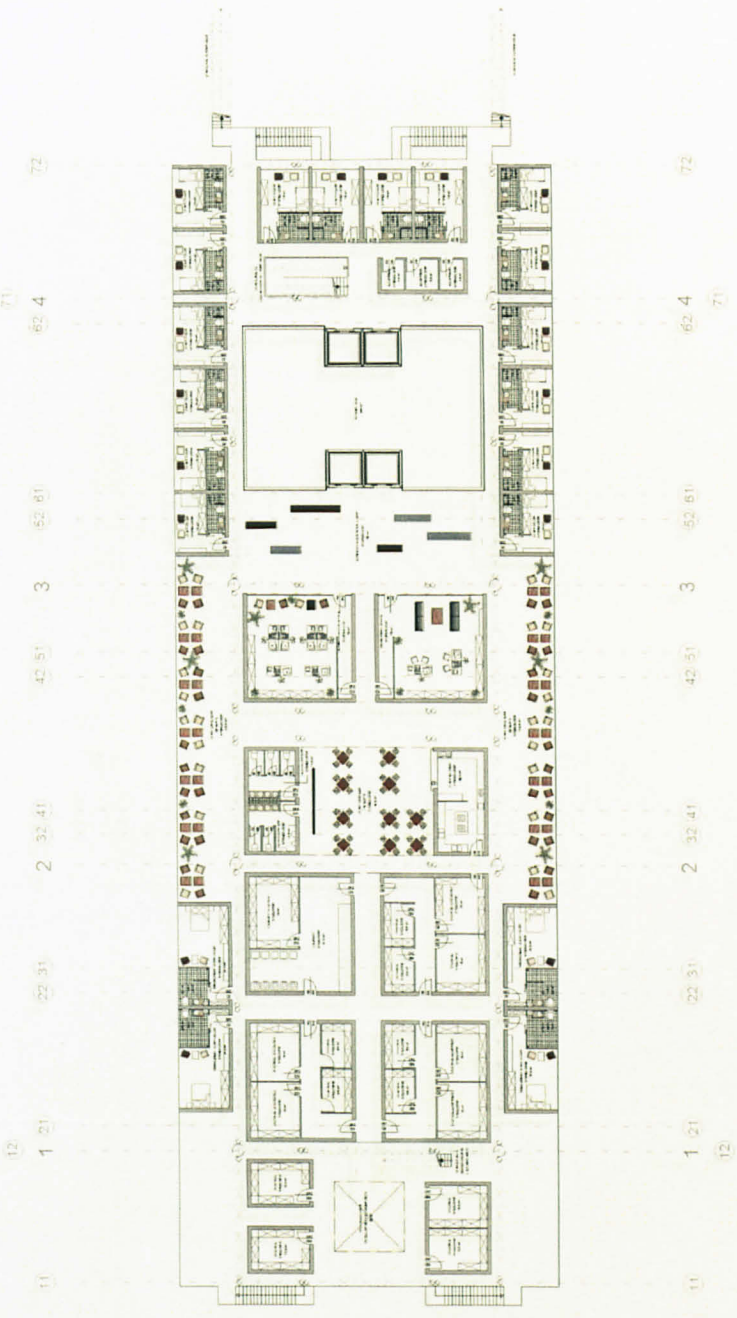


Figure 14

4.2.3 Cellar Deck 02 (Employees Deck)

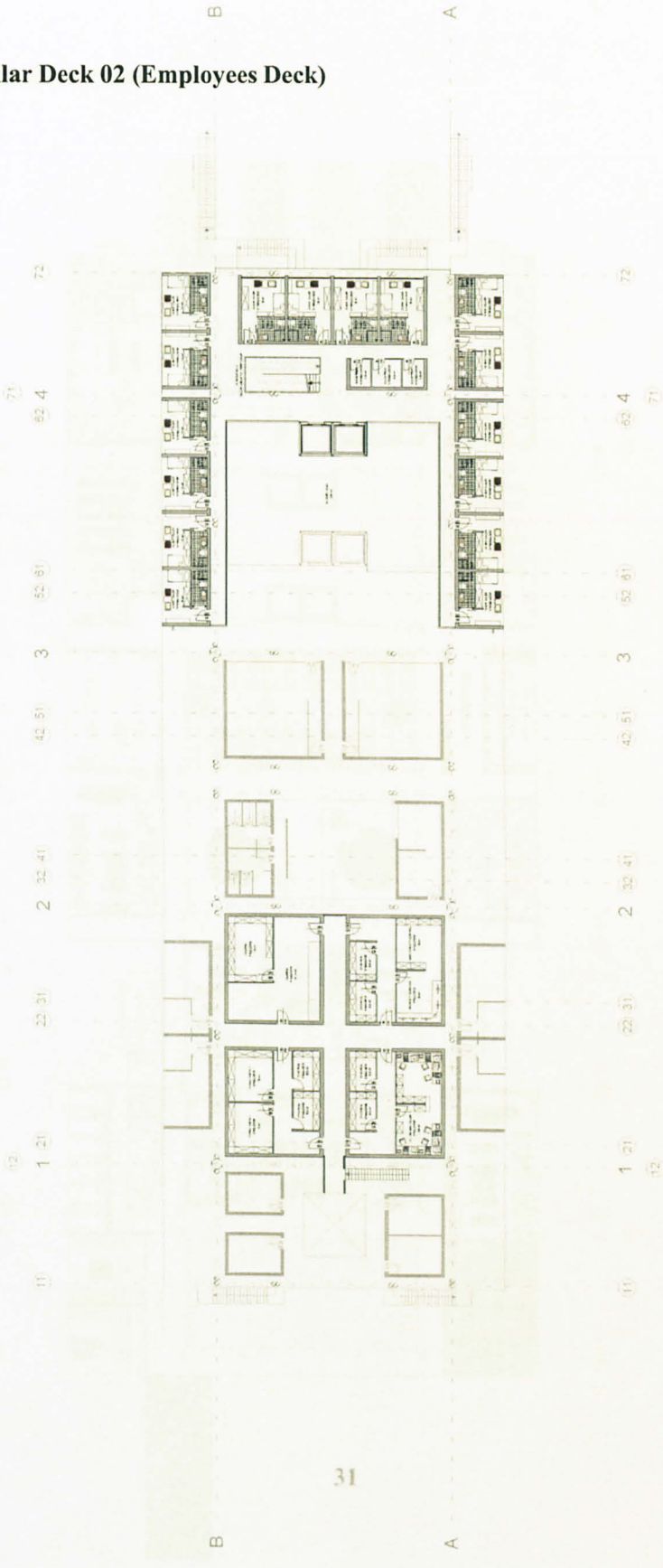


Figure 15

4.2.4 Main Deck (Seminar / Wellness)

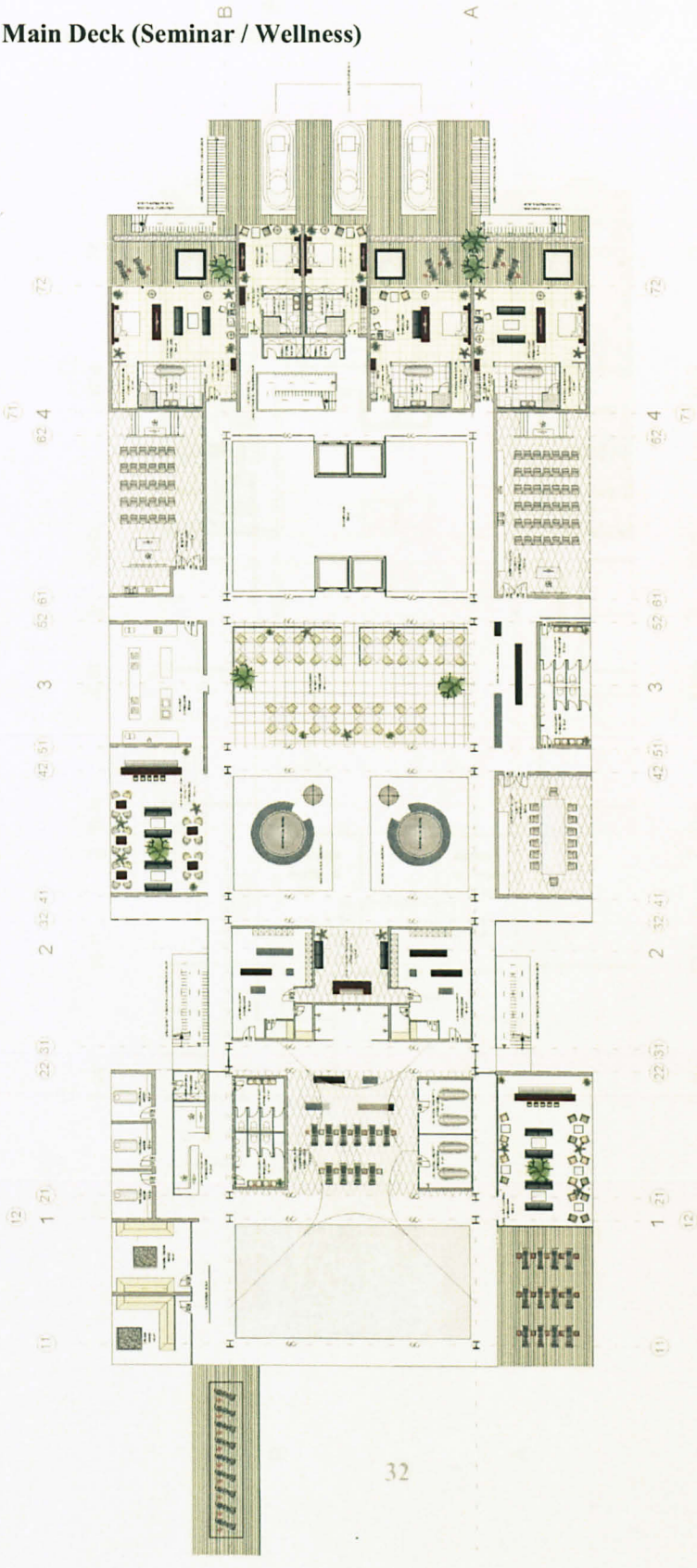


Figure 16

4.2.5 Mezzanine Deck (Hotel Suites)

Figure 17

4.2.6 Intermediate Deck (Casino / Restaurant)

Figure 18

4.2.7 Intermediate Deck 02 (Hotel Suites)

Figure 19

4.2.8 Upper Deck (Entertainment / Exhibition)

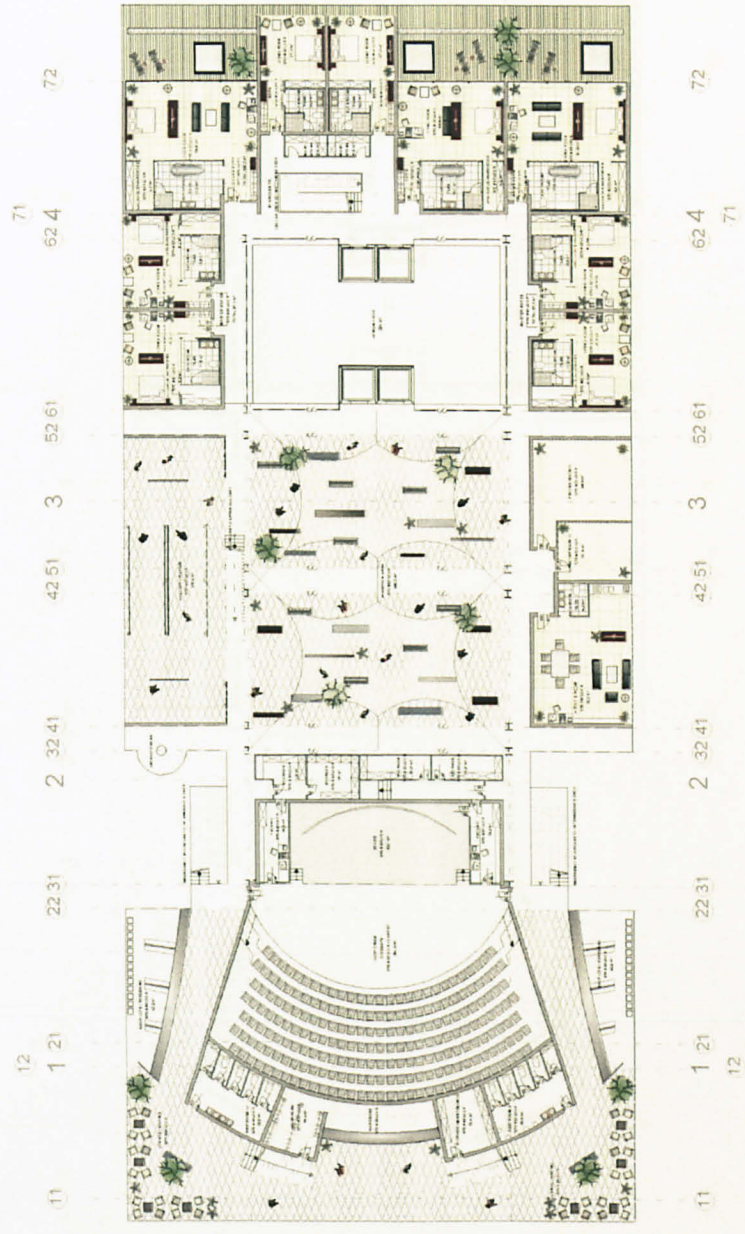


Figure 20

4.2.9 Upper Deck 02 (Hotel Suites / Gallery)

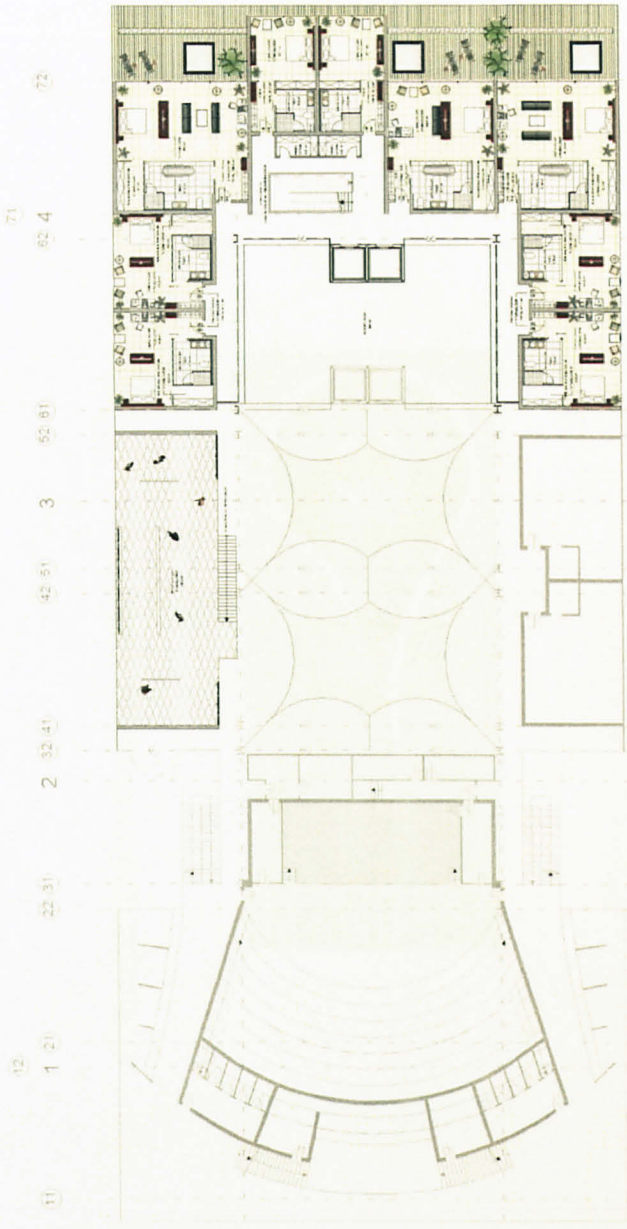


Figure 21

4.2.10 Breeze Deck (Skybar / Driving Range / Heli Pad)

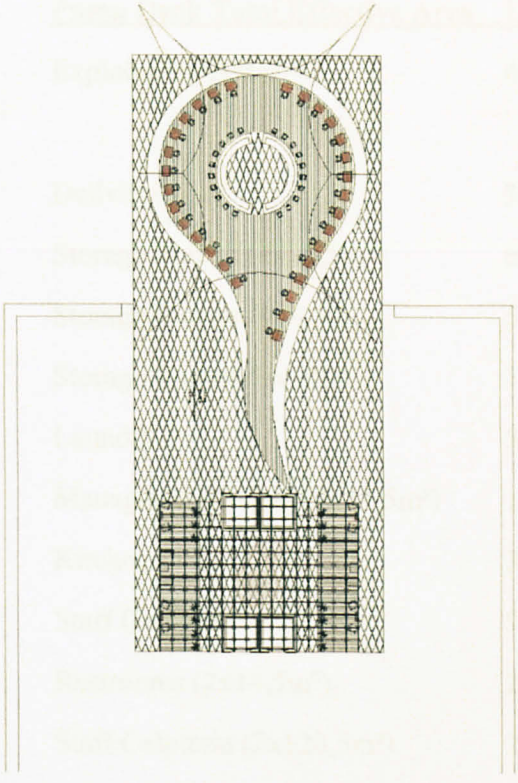


Figure 22

4.3 EFFECTIVE AREA CALCULATIONS

Pump Deck	Delivery Area	74,0 m²
	Rescue Area	378,0 m²
	Storage Rooms (2x16,5m²)	33,0 m²
	Storage Rooms (2x36,5m²)	73,0 m²
	Reception / Registration	74,3 m²
	Computer Room	17,3 m²
	Lounge / Acceptance	455,6 m²
	Pump Deck Total Effective Area	**1105,2 m²**
	Exploitation Area	404,8 m²
Cellar Deck	Delivery Area	32,0 m²
	Storage Rooms (4x15,5m²)	62,0 m²
	Storage Rooms (6x8,5m²)	51,0 m²
	Storage Rooms (7x18m²)	126,0 m²
	Laundry	51,5 m²
	Management Suites (4x31,5m²)	126,0 m²
	Kitchen	30,5 m²
	Staff Canteen	94,5 m²
	Restrooms (2x14,5m²)	29,0 m²
	Staff Cafeteria (2x120,5m²)	241,0 m²
	Management Office	70,0 m²
	Administration Office	70,0 m²
	Lobby	160,0 m²
	Staff Accommodation (12x18,5m²)	222,0 m²
	Staff Accommodation (4x20,8m²)	83,2 m²
	Equipment Rooms	15,5 m²
	Cellar Deck Total Effective Area	**1464,2 m²**
	Exploitation Area (+254m² Atrium)	1268,9 m²

Cellar Deck 02	Staff Accommodation (12x18,5m²)	222,0 m²
	Staff Accommodation (4x20,8m²)	83,2 m²
	Equipment Rooms	15,5 m²
	Storage Rooms (6x8,5m²)	51,0 m²
	Storage Rooms (7x18m²)	126,0 m²
	Technic	51,5 m²
	Cellar 02 Total Effective Area	**549,2 m²**
	Exploitation Area	342,7 m²
Main Deck	**Wellness Area**	
	Registration / Acceptance	45,5 m²
	Dressing Rooms (2x61,5m²)	123,0 m²
	Sauna	40,0 m²
	Herbal Sauna	40,0 m²
	Massage Rooms (3x13,5m²)	40,5 m²
	Therapy Reception	21,5 m²
	Maintenance	6,7 m²
	Restrooms (2x19,7m²)	39,4 m²
	Pool	194,0 m²
	Therapy Rooms (2x21,0m²)	42,0 m²
	Café Bar / Lounge	105,2 m²
	Relaxation Area	113,5 m²
	Total Wellness Area	810,8 m²
	Hotel Suites	
	Grand Suite	106,2 m²
	Standard Suites (2x37,9m²)	75,8 m²
	Grand Suite	85,5 m²
	Grand Suite	95,3 m²
	Total Suites Area	362,8 m²

Main Deck (Prosec.)	Seminar Room 1	114,2 m²
	Seminar Room 2	122,5 m²
	Conference Room	80,5 m²
	Maintenance (2x5,6m²)	11,2 m²
	Restrooms (2x21,9m²)	43,8 m²
	Restaurant / Bar	98,5 m²
	Restaurant	201,5 m²
	Kitchen	80,5 m²
	Total Area	752,7 m²
	Main Deck Total Effective Area	**1926,3 m²**
	Exploitation Area (+254m² Atrium)	1667,6 m²
Mezzanine Deck	**Hotel Suites**	
	Grand Suite	106,2 m²
	Standard Suites (2x37,9m²)	75,8 m²
	Grand Suite	85,5 m²
	Grand Suite	95,3 m²
	4 Master Suites (a´57,1m²)	228,4 m²
	Maintenance (2x5,6m²)	11,2 m²
	Total Suites Area	**602,4 m²**
	Exploitation Area	181,5 m²
Intermediate Deck	**Lifestyle Area**	
	"The Rig" Restaurant	305,2 m²
	Club Lounge / Bar	135,5 m²
	Kitchen	86,5 m²
	Grand Casino	286,3 m²
	Restrooms (2x16,3m²)	32,6 m²
	Maintenance (2x8,2m²)	16,4 m²
	Wardrobe	15,3 m²

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Int. Deck (Prosec.)	4 Shopping Stores (a`84,1m²)	336,4 m²
	Communication Area / Relaxing	225,2 m²
	Total Lifestyle Area	1439,4 m²
	Hotel Suites	
	Grand Suite	106,2 m²
	Standard Suites (2x37,9m²)	75,8 m²
	Grand Suite	85,5 m²
	Grand Suite	95,3 m²
	4 Master Suites (a´57,1m²)	228,4 m²
	Maintenance (2x5,6m²)	11,2 m²
	Total Suites Area	602,4 m²
	Interm. Deck Total Effective Area	**2041,8 m²**
	Exploitation Area (+ all Atrias)	1562,5 m²
Interm. Deck 02	**Hotel Suites**	
	Grand Suite	106,2 m²
	Standard Suites (2x37,9m²)	75,8 m²
	Grand Suite	85,5 m²
	Grand Suite	95,3 m²
	4 Master Suites (a´57,1m²)	228,4 m²
	Maintenance (2x5,6m²)	11,2 m²
	Total Suites Area	602,4 m²
	Roof Top Restaurant	170,5 m²
	Int. Deck 02 Total Effective Area	**772,9 m²**
	Exploitation Area	181,5 m²

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Upper Deck	**Arts Area / Museum**	
	Artist Room	84,4 m²
	Exhibition Area	490,2 m²
	Gallery / Museum	188,5 m²
	Total Arts Area	763,1 m²
	Prayer Rooms (27,6m²/55,6m²)	83,2 m²
	Concert / Auditorium	
	Auditorium	384,3 m²
	Stage	93,7 m²
	Shop Lots (2x42,6m²)	85,2 m²
	Restrooms (2x32,8m²)	65,6 m²
	Wardrobe	19,4 m²
	Maintenance	19,4 m²
	Technic Rooms (2x15,3m²)	30,6 m²
	Storage	11,8 m²
	Storage	15,0 m²
	Storage (2x11,2m²)	22,4 m²
	Total Concert Area	747,4 m²
	Hotel Suites	
	Grand Suite	106,2 m²
	Standard Suites (2x37,9m²)	75,8 m²
	Grand Suite	85,5 m²
	Grand Suite	95,3 m²
	4 Master Suites (a´57,1m²)	228,4 m²
	Maintenance (2x5,6m²)	11,2 m²
	Total Suites Area	602,4 m²
	Upper Deck Total Effective Area	**2196,1 m²**
	Exploitation Area (+ 254m² Atrium)	1453,9 m²

Upper Deck 02	**Hotel Suites**	
	Grand Suite	106,2 m²
	Standard Suites (2x37,9m²)	75,8 m²
	Grand Suite	85,5 m²
	Grand Suite	95,3 m²
	4 Master Suites (a´57,1m²)	228,4 m²
	Maintenance (2x5,6m²)	11,2 m²
	Total Suites Area	602,4 m²
	Gallery / Museum	188,5 m²
	Upper Deck 02 Total Effect. Area	**790,9 m²**
	Exploitation Area	181,5 m²
Breeze Deck	**Skybar**	306,2 m²

TOTAL PLATFORM EFFECT AREA NET

PUMP DECK	1105,2 m²
CELLAR DECK	1464,2 m²
CELLAR DECK 02	549,2 m²
MAIN DECK	1926,3 m²
MEZZANINE DECK	602,4 m²
INTERMEDIATE DECK	2041,8 m²
INTERMEDIATE DECK 02	772,9 m²
UPPER DECK	2196,1 m²
UPPER DECK 02	790,7 m²
BREEZE DECK	306,2 m²

TOTAL EFFECTIVE AREA	**(NET)**	**11755,0 m²**
Total Area inclusive Exploitation (GROSS)		**18999,9 m²**

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

To compile a project of this dimension and complexity in a reasonable way, it needs time to learn the theory and to gather useful data. In spite of the constricted media which I got placed at the disposal, I still kept interest, because in my opinion it is possible to realize a project like this. Sometimes it was more challenging to get media and support then to work on the project itself, but in the end I found my way through all barriers and came out with a realistic and reasonable way of remodeling an abandon oil platform.

5.2 RECOMMENDATIONS

In the beginning of the report I introduced the two common, but different ways of further usage of an abandon oil rig. At first, to deconstruct and remove them and second to deconstruct and remodel them into artificial reefs. My project shows one more and unique opportunity to remodel an oil rig. To transform it into an entertainment island will afford a huge profit as well as it provides new employment. Also the commercial factor will afford a new exploitation of customers as well as an international statement of realizing unique ideas. The project itself would be seen as a (sea-) landmark and point the strength of the companies behind in the world markets.

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List of Figures

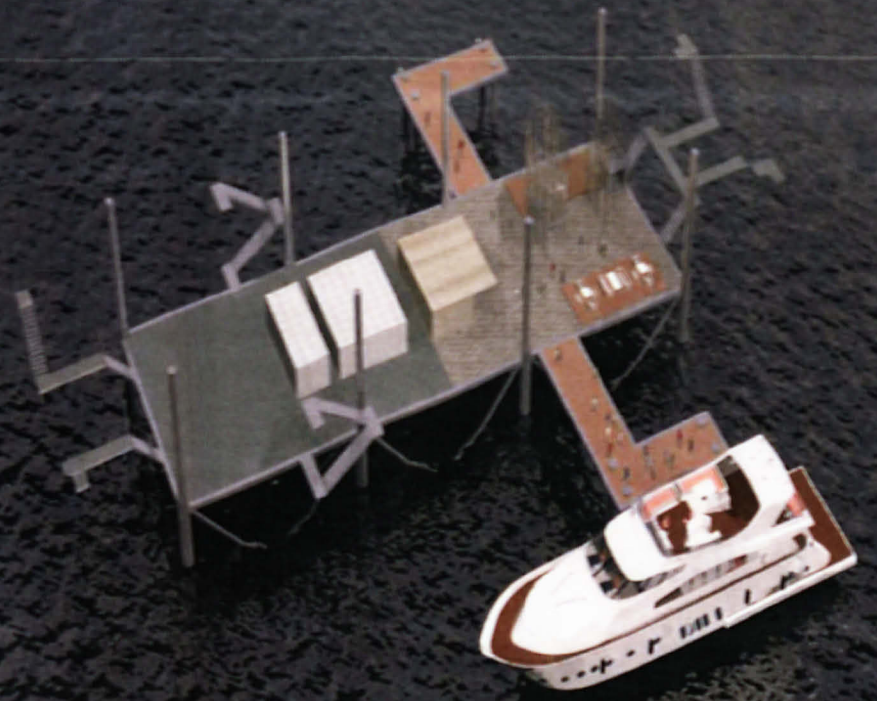
Continues on next page

List of Figures (Prosec.)

3D MODELLING

PUMP DECK

Delivery Area	74,0 m²
Rescue Area	378,0 m²
Storage Rooms (2x16,5m²)	33,0 m²
Storage Rooms (2x36,5m²)	73,0 m²
Reception / Registration 7	4,3 m²
Computer Room 17,3 m²	
Lounge / Acceptance	455,6 m²
Total Effective Area	1105,2 m²
Exploitation Area	404,8 m²



3D MODELLING

APPENDIX

CELLAR DECK

Delivery Area	32,0 m²
Storage Rooms (4x15,5m²)	62,0 m²
Storage Rooms (6x8,5m²)	51,0 m²
Storage Rooms (7x18m²)	126,0 m²
Laundry	51,5 m²
Management Suites (4x31,5m²)	126,0 m²
Kitchen	30,5 m²
Staff Canteen	94,5 m²
Restrooms (2x14,5m²)	29,0 m²
Staff Cafeteria (2x120,5m²)	241,0 m²
Management Office	70,0 m²
Administration Office	70,0 m²
Lobby	160,0 m²
Staff Accommodation (12x18,5m²)	222,0 m²
Staff Accommodation (4x20,8m²)	83,2 m²
Equipment Rooms	15,5 m²
Cellar Deck Total Effective Area	1464,2 m²
Exploitation Area (+254m² Atrium)	1268,9 m²

CELLAR DECK 02

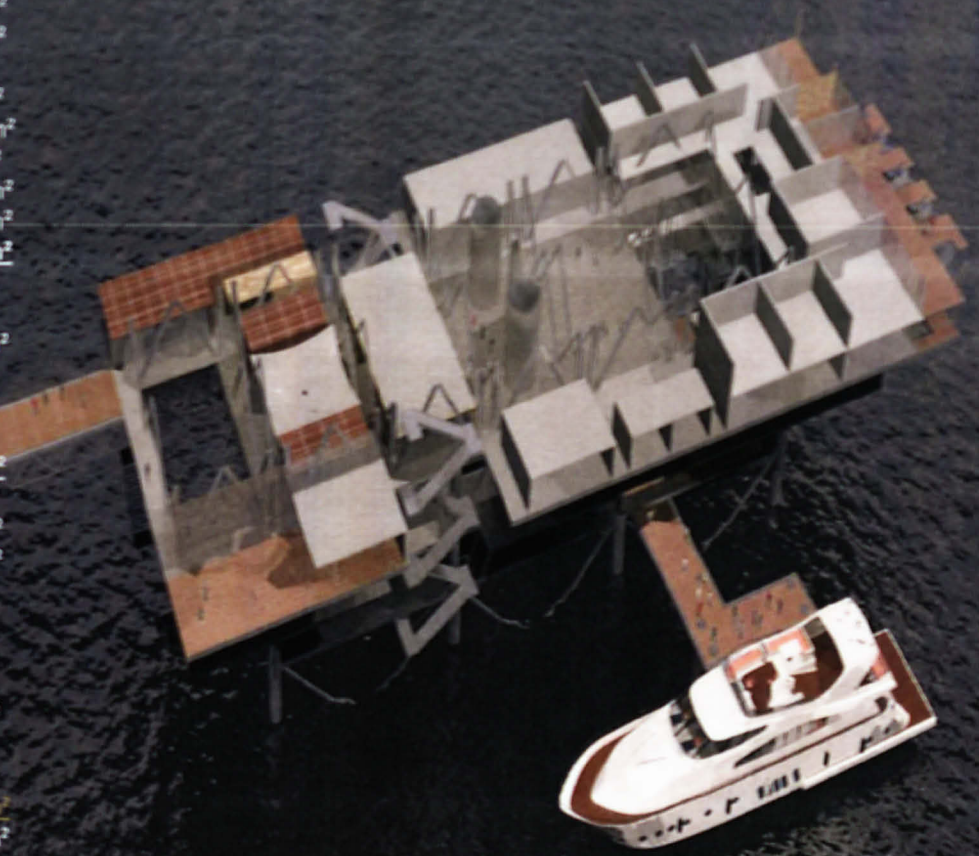
Staff Accommodation (12x18,5m²)	222,0 m²
Staff Accommodation (4x20,8m²)	83,2 m²
Equipment Rooms	15,5 m²
Storage Rooms (6x8,5m²)	51,0 m²
Storage Rooms (7x18m²)	126,0 m²
Technic	51,5 m²
Cellar 02 Total Effective Area	549,2 m²
Exploitation Area	342,7 m²

3D MODELLING

APPENDIX

MAIN DECK

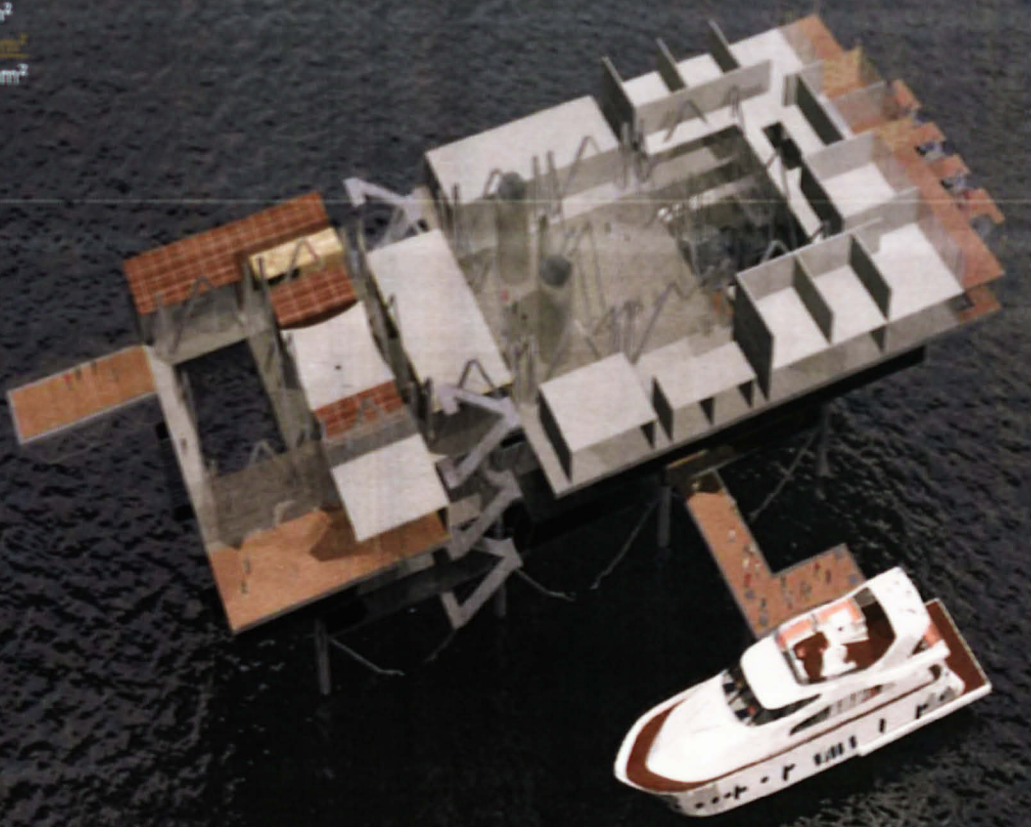
Wellness Area	
Registration / Acceptance	45,5 m²
Dressing Rooms (2x61,5m²)	123,0 m²
Sauna 40,0 m²	
Herbal Sauna 40,0 m²	
Massage Rooms (3x13,5m²)	40,5 m²
Therapy Reception	21,5 m²
Maintenance 6,7 m²	
Restrooms (2x19,7m²)	39,4 m²
Pool	194,0 m²
Therapy Rooms (2x21,0m²)	42,0 m²
Cafe Bar / Lounge	105,2 m²
Relaxation Area	113,5 m²
Total Wellness Area	**810,8 m²**
Hotel Suites	
Grand Suite	106,2 m²
Standard Suites (2x37,9m²)	75,8 m²
Grand Suite	85,5 m²
Grand Suite	95,3 m²
Total Suites Area	362,8 m²
Seminar Room 1	114,2 m²
Seminar Room 2	122,5 m²
Conference Room	80,5 m²
Maintenance (2x5,6m²)	11,2 m²
Restrooms (2x21,9m²)	43,8 m²
Restaurant / Bar	98,5 m²
Restaurant	201,5 m²
Kitchen	80,5 m²
Total Area	752,7 m²
Main Deck Total Effective Area	1926,3 m²
Exploitation Area (+254m² Atrium)	1667,6 m²



3D MODELLING

MEZZANINE DECK

Owner Suites	
Grand Suite	106,2 m²
Standard Suites (2x37,9m²)	75,8 m²
Grand Suite	85,5 m²
Grand Suite	95,3 m²
4 Master Suites (a 57,1m²)	228,4 m²
Maintenance (2x5,6m²)	11,2 m²
Total Mezzanine Area	602,4 m²
Exploitation Area	181,5 m²



3D MODELLING

APPENDIX

INTERMEDIATE DECK

Lifestyle Area	
"The Rig" Restaurant	305,2 m²
Club Lounge / Bar	135,5 m²
Kitchen	86,5 m²
Grand Casino	286,3 m²
Restrooms (2x16,3m²)	32,6 m²
Maintenance (2x8,2m²)	16,4 m²
Wardrobe 15,3 m²	181,5 m²
4 Shopping Stores (a`84,1m²)	336,4 m²
Communication Area / Relaxing	225,2 m²
Total Lifestyle Area	**1439,4 m²**

Hotel Suites	
Grand Suite	106,2 m²
Standard Suites (2x37,9m²)	75,8 m²
Grand Suite	85,5 m²
Grand Suite	95,3 m²
4 Master Suites (a`57,1m²)	228,4 m²
Maintenance (2x5,6m²)	11,2 m²
Total Suites Area	602,4 m²
Intermed. Deck Total Effective Area	2041,8 m²
Exploitation Area (+ all Atrias)	1562,5 m²

INTERMEDIATE DECK 02

Hotel Suites	
Grand Suite	106,2 m²
Standard Suites (2x37,9m²)	75,8 m²
Grand Suite	85,5 m²
Grand Suite	95,3 m²
4 Master Suites (a`57,1m²)	228,4 m²
Maintenance (2x5,6m²)	11,2 m²
Total Suites Area	**602,4 m²**
Roof Top Restaurant	170,5 m²
Int. Deck 02 Total Effective Area	772,9 m²
Exploitation Area	181,5 m²

3D MODELLING

APPENDIX

UPPER DECK

Arts Area / Museum	
Artist Room	84,4 m²
Exhibition Area	490,2 m²
Gallery / Museum	188,5 m²
Total Arts Area	**763,1 m²**

Prayer Rooms (27,6m²/55,6m²)	**83,2 m²**

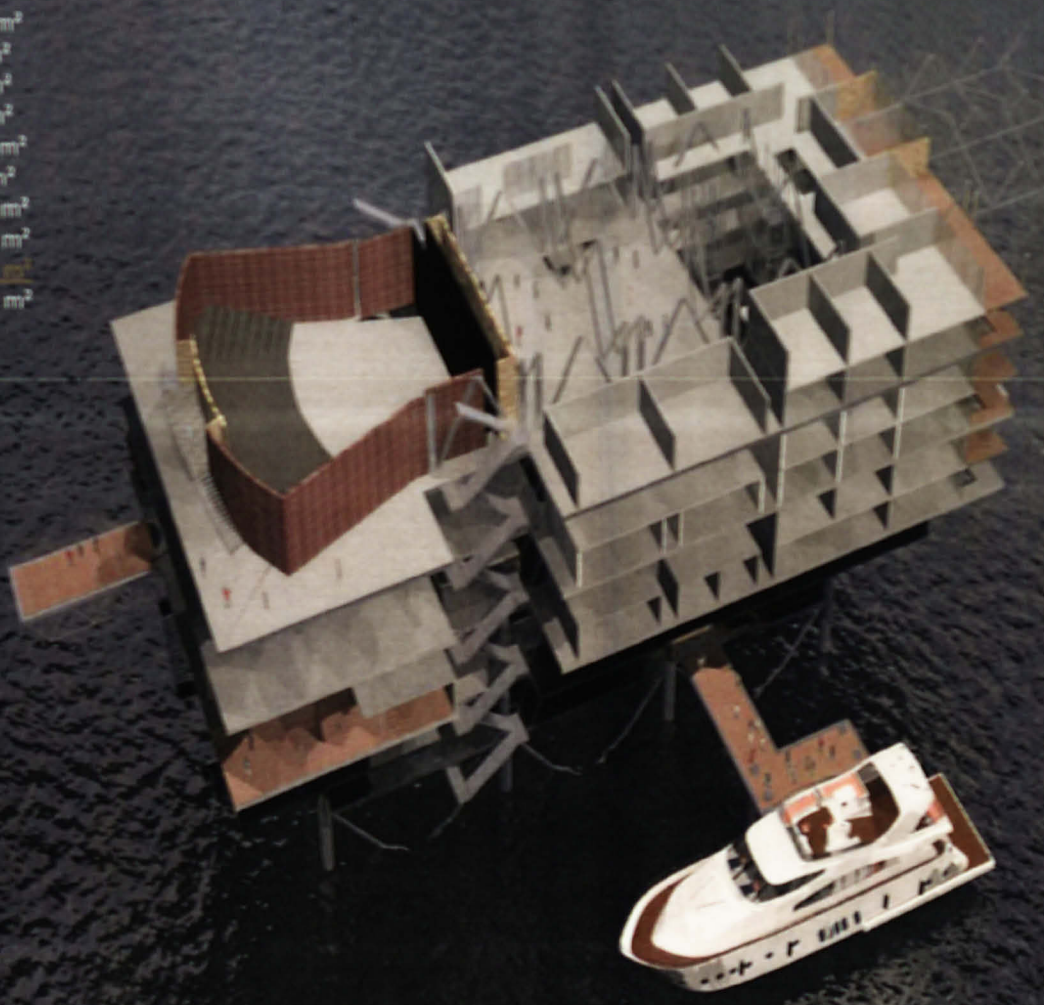
Concert / Auditorium	
Auditorium	384,3 m²
Stage	93,7 m²
Shop Lots (2x42,6m²)	85,2 m²
Restrooms (2x32,8m²)	65,6 m²
Wardrobe	19,4 m²
Maintenance	19,4 m²
Technic Rooms (2x15,3m²)	30,6 m²
Storage	11,8 m²
Storage	15,0 m²
Storage (2x11,2m²)	22,4 m²
Total Concert Area	**747,4 m²**

Hotel Suites	
Grand Suite	106,2 m²
Standard Suites (2x37,9m²)	75,8 m²
Grand Suite	85,5 m²
Grand Suite	95,3 m²
4 Master Suites (a°57,1m²)	228,4 m²
Maintenance (2x5,6m²)	11,2 m²
Total Suites Area	**602,4 m²**
Upper Deck Total Effective Area	2196,4 m²
Exploitation Area (+ 254m² Atrium)	1453,9 m²

3D MODELLING

UPPER DECK 02

Hotel Suites	
Grand Suite	106,2 m²
Standard Suites (2x37,9m²)	75,8 m²
Grand Suite	85,5 m²
Grand Suite	95,3 m²
4 Master Suites (a 57,1m²)	228,4 m²
Maintenance (2x5,6m²)	11,2 m²
Total Suites Area	602,4 m²
Gallery / Museum	188,5 m²
Upper Deck 02 Total Effect. Area	790,9 m²
Exploitation Area	181,5 m²

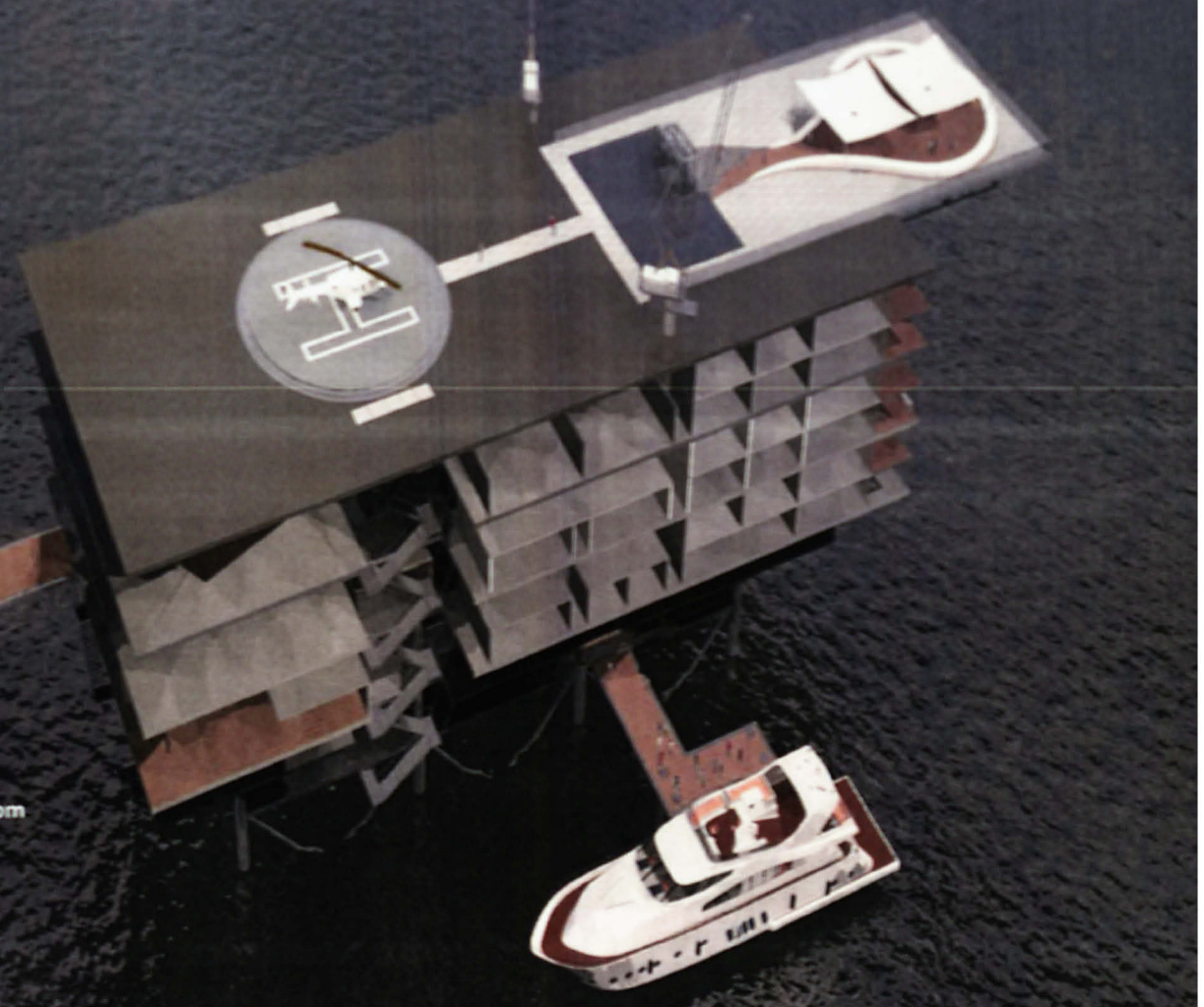


3D MODELLING

APPENDIX

BREEZE DECK

Skybar	306,2 m²



TOTAL PLATFORM EFFECT AREA NET

PUMP DECK	1105,2 m²
CELLAR DECK	1464,2 m²
CELLAR DECK 02	549,2 m²
MAIN DECK	1926,3 m²
MEZZANINE DECK	602,4 m²
INTERMEDIATE DECK	2041,8 m²
INTERMEDIATE DECK 02	772,9 m²
UPPER DECK	2196,1 m²
UPPER DECK 02	790,7 m²
BREEZE DECK	306,2 m²
TOTAL EFFECTIVE AREA (NET)	**11755,0 m²**
Total Area inclusive Exploitation	**18999,9 m²**

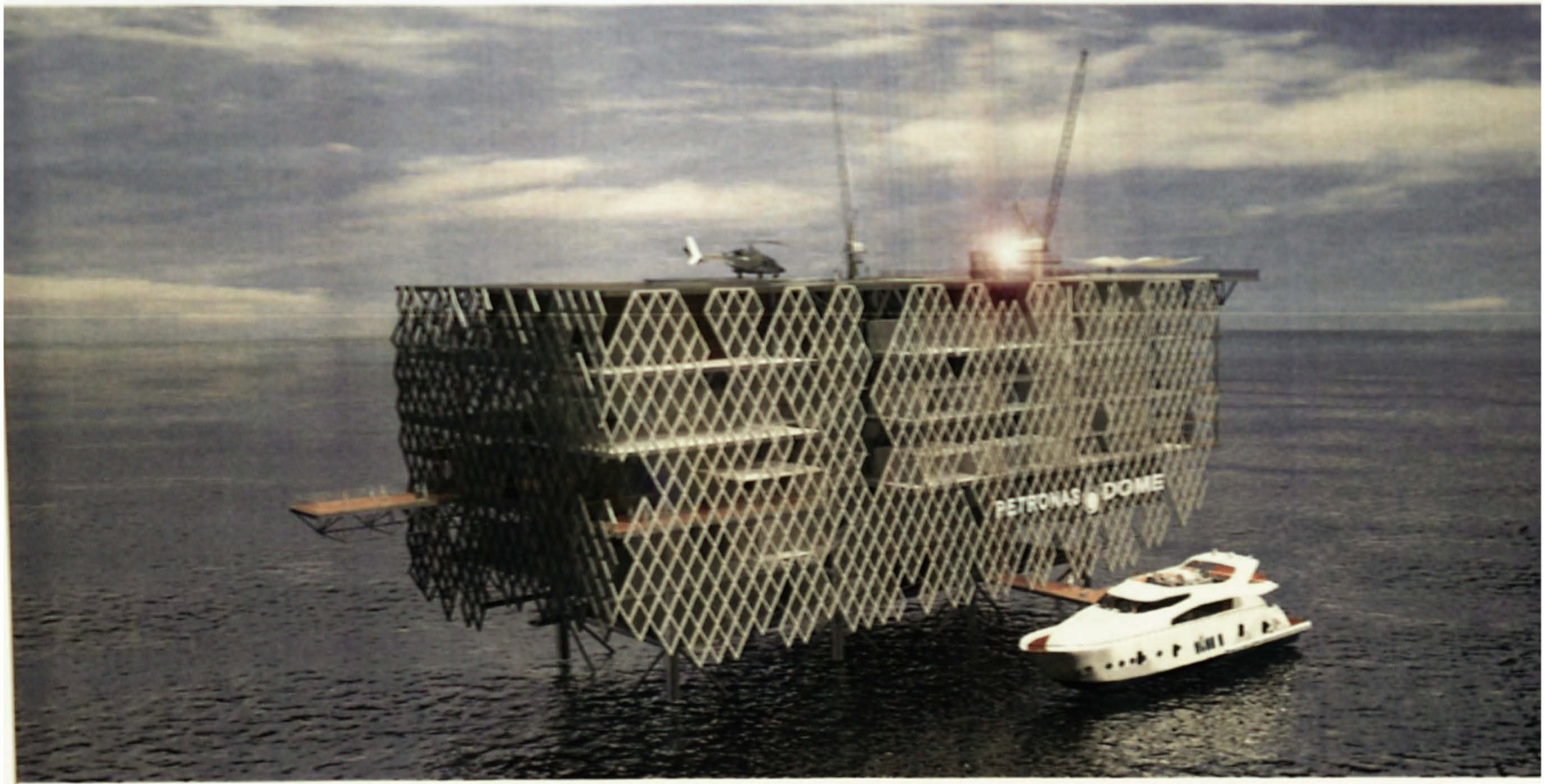
TARGET AUDIENCE = UPPER CLASS
CUSTOMER CAPACITY (max. 10 km distance from coast)

45 Hotel Suites	= 135 Guests
Total Customer Capacity	**500 Guests**

3D VISUALIZATION

RENDERINGS

APPENDIX



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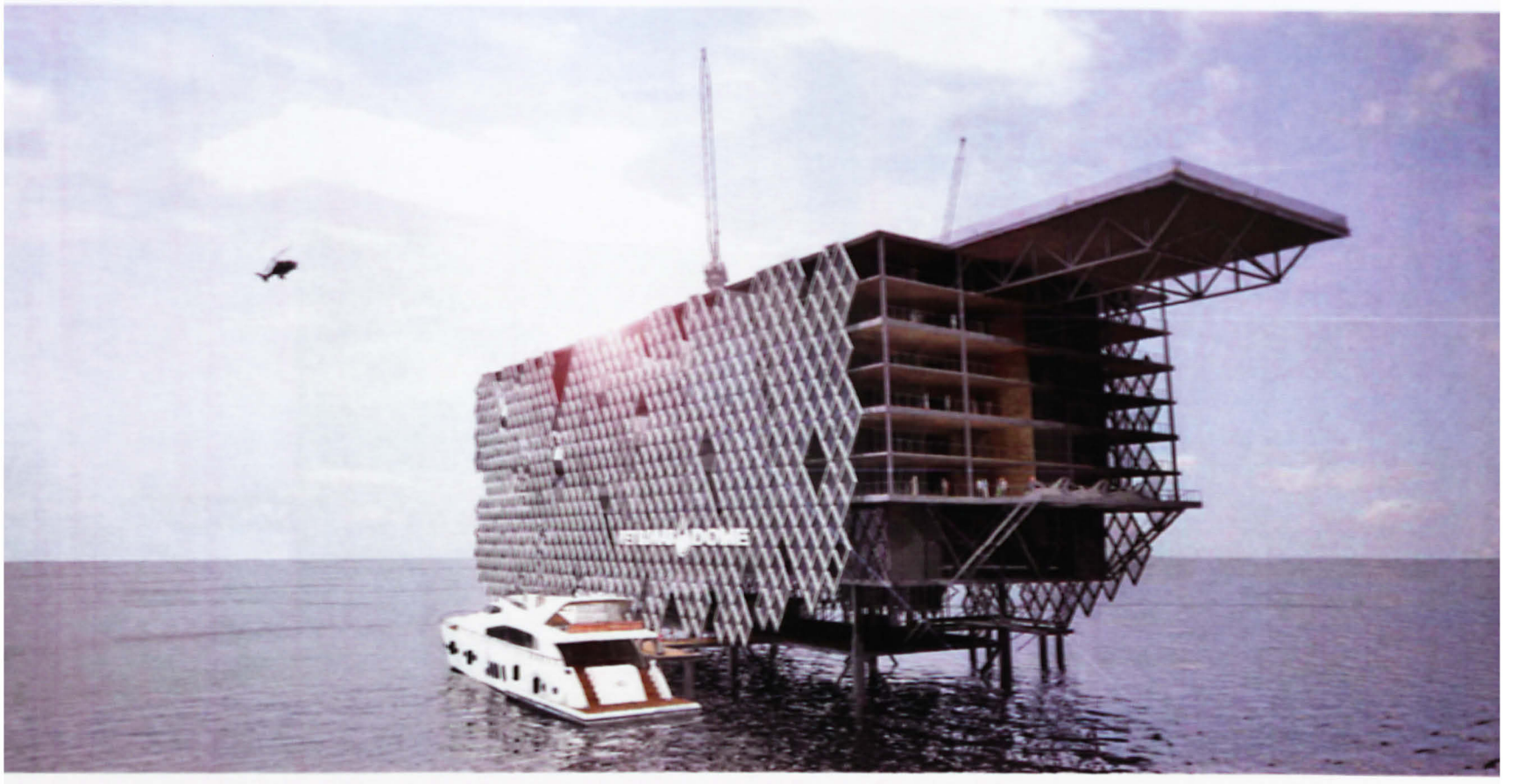
by Bernhard Viereck

RENDERINGS



3D VISUALIZATION

RENDERINGS

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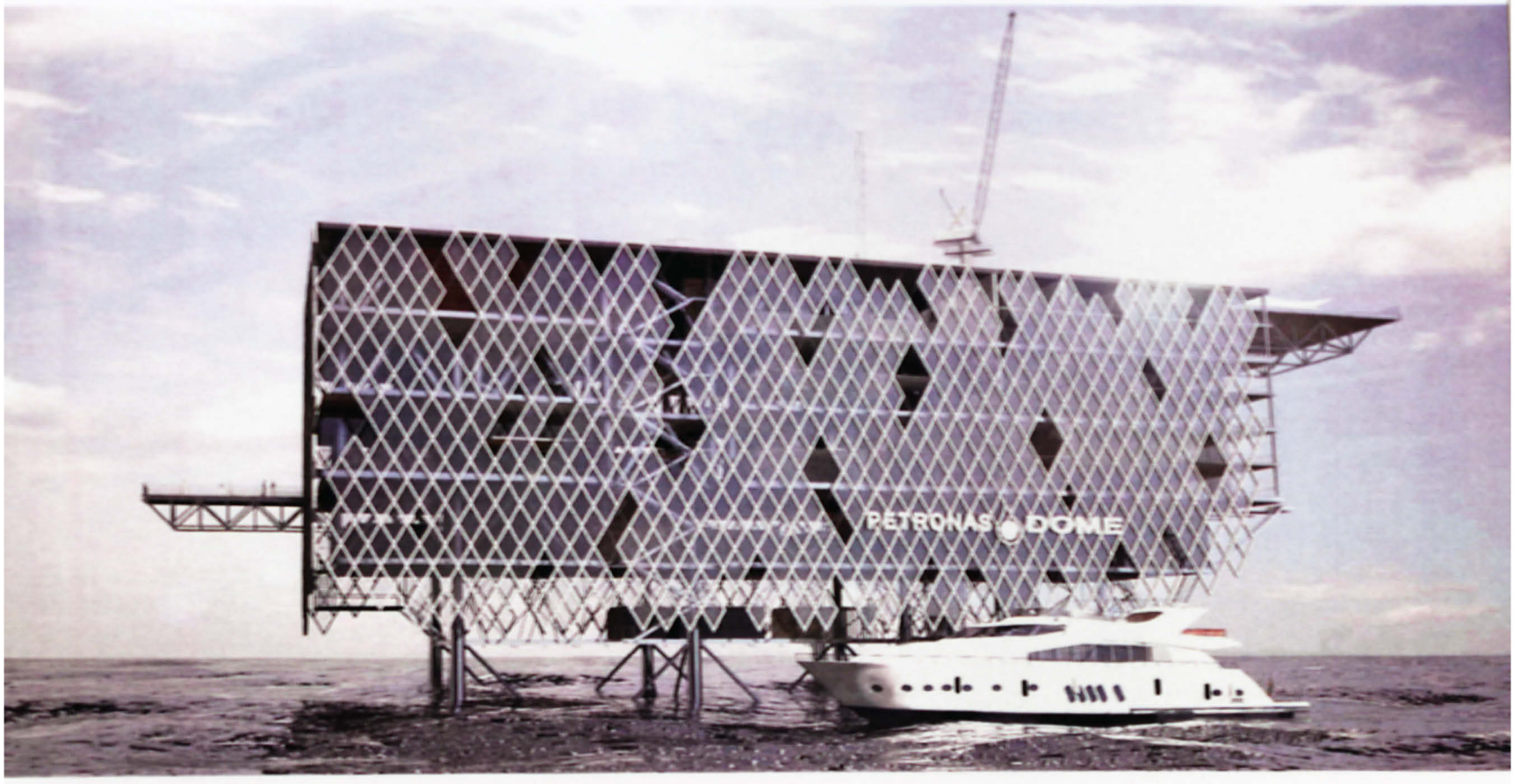

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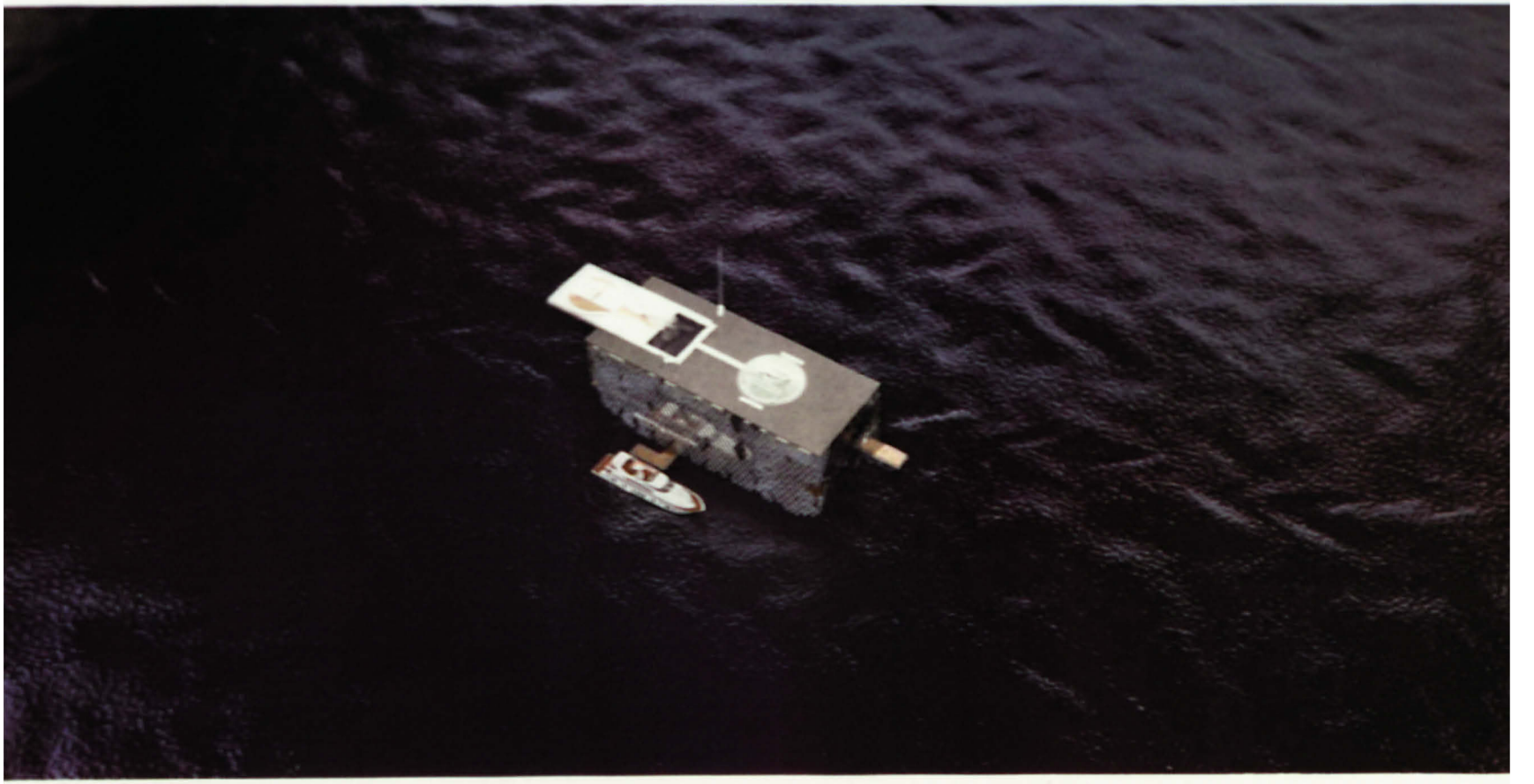

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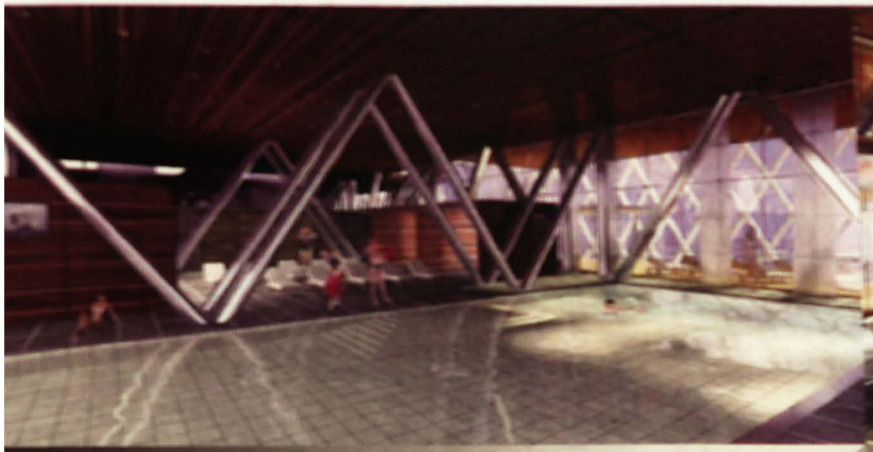

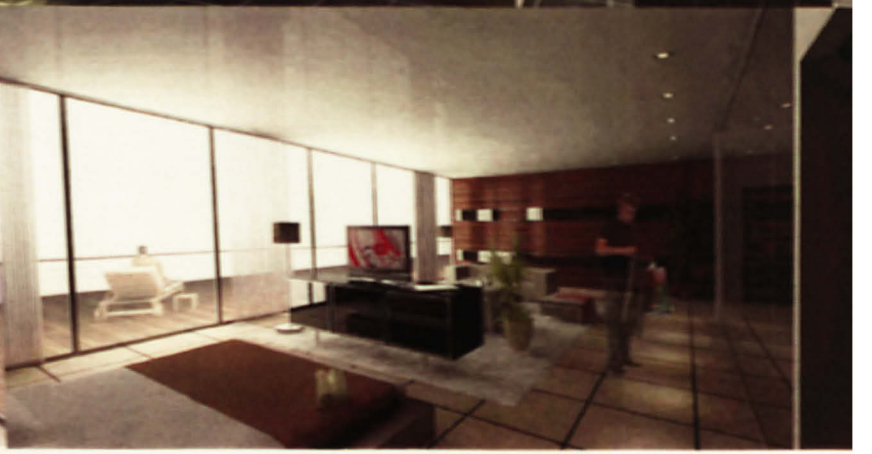

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